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THE FIRST YEAR OF THE SECTION ON GASTRO-ENTEROLOGY AND PROCTOLOGY*

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NEW YORK

The activities manifested at the first meeting of this section last year proved the wisdom of the House of Delegates in its establishment. Constantly spreading interest in it since that time is reason enough for its necessity and assures a progressive success. Although many of our gastro-enterologists and proctologists are now serving the country in efficient war work, the program, because of the rapidly increasing numbers of men interested in these fields, in quality and extent is but a small part of what was easily possible. Throughout the breadth of our beloved country, general practitioners, internists, surgeons and others are keenly in search of knowledge on these subjects, and they feel that this is a forum of first importance in which to help them. The House of Delegates builded well and it seems a pleasure on the part of many Fellows of the Association to prove it. In doing this no outside organization did other than its full share collectively and individually, and as your chairman, it pleases me to state that the American and Southern Gastro-Enterologic Associations, the American Proctologic Society and others have shown a most admirable spirit, a spirit of true fellowship of the highest fraternal type.

You will remember that Dwight Murray in the chairman's address last year said:

> It seems to me that during our discussion of the symposiums much can be said which would be of great benefit to the military service and the life of the boys in the Army as to the care of their digestive and eliminative tracts. Advice along this line could come from no more competent body of medical men than are in this section of the American Medical Association, and I believe it would be pertinent, notwithstanding the fact that we shall have many good physicians as officers of the Army, and without doubt it would be welcomed. Nothing could make for greater efficiency in our Army than the keeping of the gastro-enterocolonic tract in a normal condition. Possibly the offering of such advice at the present time may be too late, but I would recommend the appointment of a committee of five to formulate rules for the care of the gastro-intestinal tract. Such committee should deal especially with nutrition and elimination, and submit its report to the general committee of national defense, if it is found that the medical advisory board would welcome such advice.

*Chairman's address, read before the Section on Gastro-Enterology and Proctology at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

DEPARTMENT OF GASTRO-ENTEROLOGY IN MEDICAL SERVICE OF THE ARMY

As a result of this, a committee of five was appointed, consisting of Dwight Murray of Syracuse, M. E. Rehfuss of Philadelphia, William Gerry Morgan of Washington, Dudley Roberts of Brooklyn and William M. Beach of Pittsburgh. After indefatigable labor and much expense and time, they succeeded in having the Army authorities recognize gastro-enterology and proctology, with the appointment of men in the cantonments and for oversea service. It must be to our credit that the responses to the requests that went out were prompt, and soon practically all of the positions were filled with qualified men.

Thus it is plain to all that the two greatest epochs in the history of gastro-enterology and proctology that history records anywhere in the world have been accomplished in little more than a year's time: first, the recognition of this field of work by the largest national medical organization of any country in the world in the establishment of a separate section for it, and second, a recognition by the Army authorities of the fact that men so trained would be valuable additions to the Army medical staff in caring for the lads we are so proud of today. To the men who have had to do with bringing these two events about much credit is due.

DUTY OF THE PHYSICIAN IN WAR

In this moment of the nation's fight for right principle of free government, it would sadly behoove me to narrate on matters of medical topics. Beyond anything that these might be is the fact that we are at war with a country which seeks in medieval ways to fasten on the world the rule of "might makes right" by advanced methods of destruction and after years of preparation for it. Nothing that the human being holds dear—his work, his health and life, his loves and affections, his freedom, his spirtuality, his achievements of the past, his country—nothing must be left him. The heart, soul and body of another counts for nothing against the sordid desire of this viciousness, and when this is brutally and ruthlessly carried out in antithesis of all laws, religions and ethics, there is nothing to do but to fight for the right, and we ennoble ourselves in doing so. God in his mercy will see us safely and securely through, but while we are passing through, the medical profession of America must do its share. At no time should we be the servants of the people and the country as liberally as at present. Our work in the war is tremendously important, and every one of us with real blood in his body must feel this. The country needs more medical men, and every

one who possibly can should serve. To you, gentlemen of the section, remember that a commission in this great work awaits you, an opportunity to serve your country and your fellow man, and the noblest of all professions.

ANOMALIES OF THE BILE DUCTS AND BLOOD VESSELS

AS THE CAUSE OF ACCIDENTS IN BILIARY SURGERY *

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CHICAGO

The rapid increase during recent years in the number of operations on the gallbladder and bile ducts has been accompanied by the report of a series of cases of injuries to the ducts and of severe hemorrhage from vessels in their vicinity.

This subject is of the utmost importance to every surgeon and merits a closer study of the causes of such accidents and of their prevention in the future.

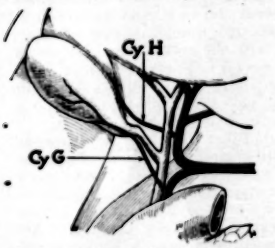

Fig. 1.—Normal angular mode of union of a short cystic duct with the hepatic duct well above upper border of duodenum. Specimen also shows two separate cystic arteries, one (*Cy H*) arising from the common hepatic artery and passing to the neck of the gallbladder, the second, or accessory cystic artery (*Cy G*), arising from the gastroduodenal artery and crossing the common duct. If one does not remember the possibility of such an accessory cystic artery, severe hemorrhage may result, and in the effort to grasp the bleeding vessel the common duct or the hepatic duct may be injured.

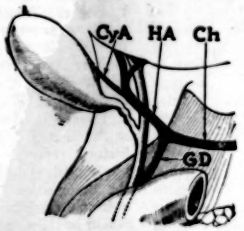

Fig. 2.—Anomaly of the hepatic artery (*H A*). Either the main hepatic or only the right branch passes across the front of the hepatic duct, making a wide arch toward the right before giving off the cystic artery (*Cy A*). The hepatic artery is thus liable to be injured tangentially in mobilizing the neck of the gallbladder during cholecystectomy. *C H*, common hepatic trunk or artery which divides into the hepatic artery proper (*H A*) and the gastroduodenal artery (*G D*).

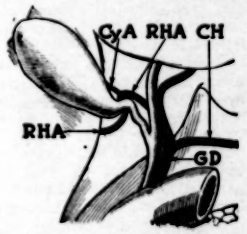

Fig. 3.—Right hepatic artery (*R H A*) runs parallel to cystic duct and then arches behind it at neck of gallbladder to enter right lobe of liver. Before doing so it gives off the cystic artery (*Cy A*) at neck of gallbladder. This anomaly is of great importance because the relatively large hepatic artery (size of radial in our specimen) may be injured during mobilization of neck of the gallbladder or of the cystic duct. *C H* and *G D*, as in Figure 2.

Eliot[1] has recently collected all of the published case reports of injuries of the bile ducts during operation. Twenty-one of twenty-three accidents occurred during cholecystectomy, and the remaining two during pyloric resections for cancer. There were three types of injury to the hepatic and common ducts: (*a*) removal of a portion of the wall; (*b*) complete division, and (*c*) removal of the junction of the cystic and hepatic ducts.

The most important factors in the etiology of such injuries of the ducts are:

1. The lack of knowledge on the part of the majority of surgeons that variations in the mode of union, course and length of the cystic, hepatic and common ducts are far more common than our textbooks on anatomy have led us to believe.

2. The presence of anomalies in the mode of origin and course of the cystic and hepatic arteries resulting in hemorrhage, and the inclusion of the bile ducts either in the grasp of the artery forceps or in a ligature applied around the bleeding point.

3. The obliteration of landmarks as the result of inflammatory changes.

We are all familiar with the classical description in every textbook of anatomy, of the acute angle (Fig. 1) formed by the junction of the short cystic duct with the hepatic duct, and also with the mode of origin of the cystic artery from the right hepatic artery (Figs. 1 and 5) and its entrance into the gallbladder at the junction of its neck with the cystic duct. If these time honored relations were present, as we were formerly taught, in every person, no accidents would occur; hence we are greatly interested with the exceptions to the rule.

Our knowledge of the anomalies in the distribution of the blood vessels of this region is in great measure due to the investigations of Rio Branco[2] and Descomps,[3] while the first to call attention to variations in the mode of union of the cystic and hepatic ducts was Ruge,[4] whose work was confirmed by Kunze,[5] Descomps[3] and myself.

The most important vascular anomalies, according to Rio Branco and Descomps, are the following:

1. *Hepatic Artery* (*Right*).—(*a*) In 12 per cent., the main or the right hepatic artery crosses the front of the hepatic duct (Fig. 2).

(*b*) In 10 per cent. (Fig. 3), the right hepatic artery runs parallel to the cystic duct and might be injured during cholecystectomy.

(*c*) In 8 per cent., a right hepatic artery lying behind the hepatic duct makes a curve or arch toward the right of the hepatic duct and might easily be injured tangentially.

2. *Cystic Artery.*—(*a*) Anomalous origin of the cystic artery is present in 12 per cent. Of chief interest is its origin from the gastroduodenal artery, entering the gallbladder after crossing the common duct obliquely (Fig. 1).

(*b*) There may be two cystic arteries (Fig. 1). One artery may arise from the right hepatic, the other

* From the Department of Surgery, Rush Medical College.
* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

1. Eliot, Ellsworth, Jr.: Surg., Gynec. and Obst., 1918, **26**, 81.
2. Rio Branco: Surgical Anatomy of the Coeliac Axis, Paris, G. Steinheil, 1912.
3. Descomps: Bull. de la Soc. anat., 1910, **4**, 328; Recherches d'anatomie chirurgicale sur les arteres de l'abdomen, le tronc coeliaque, Paris, G. Steinheil, 1910.
4. Ruge, E.: Arch. f. klin. Chir., 1908, **77**, 47-78.
5. Kunze, H.: Beitr. z. klin. Chir., 1911, **73**, 491-504.

from the gastroduodenal or one from the right hepatic and the other from the common hepatic, or, finally, both from the left hepatic. Bleeding may occur if the second cystic artery is overlooked, mistaken for a strand of fibrous tissue, and divided before ligation.

(*c*) In the relation of cystic artery to hepatic duct, in 27 per cent. the cystic artery arises on the left side of the hepatic duct and must cross in front of it (Fig. 4) to reach the gallbladder.

3. *Gastroduodenal Artery.*—This is of importance in common duct operations.

(*a*) In 38 per cent., this artery lies in a plane anterior to the common duct at the level of the head of the pancreas.

(*b*) In 20 per cent., either the main artery or a branch (Fig. 5) crosses in front of the common duct and may be injured during supraduodenal choledochostomy.

ANOMALIES IN THE MODE OF UNION OF THE CYSTIC AND HEPATIC DUCTS

The first publication on the various types in the modes of union of the cystic and hepatic ducts, and the relative frequency of each type, is that of Ruge in 1908.

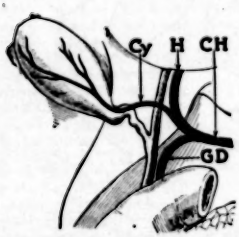

Fig. 4.—Normal angular mode of union of the cystic and hepatic ducts to form the common duct. The cystic artery (*Cy*) arises from the right hepatic artery (*H*) in the normal manner, but crosses the anterior surface of the hepatic duct. Note triangle formed by cystic artery with hepatic and cystic ducts. *C H* and *G D*, as in Figures 2 and 3.

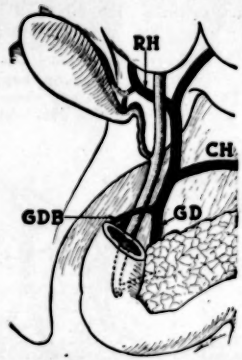

Fig. 5.—Most frequent mode of origin of the cystic artery and also of an anomalous branch of the gastroduodenal artery crossing the common duct. The cystic artery usually arises from the right hepatic artery (*R H*) shortly after the latter passes behind the hepatic duct. Note branch (*G D B*) of gastroduodenal artery (*G D*) crossing common duct near its lower end. *CH*, as in Figures 2, 3 and 4.

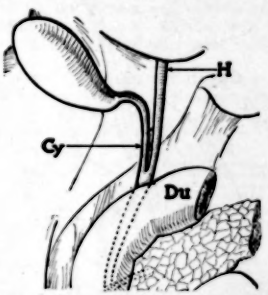

Fig. 6.—Short parallel type of mode of union of the cystic and hepatic ducts. The cystic duct (*Cy*) runs parallel to the hepatic duct (*H*) either to the upper border of the duodenum or to the upper border of the pancreas. The two ducts are firmly bound together by fibrous tissue.

Before giving the results of Ruge's observations and those of Kunze and Descomps and of my own work, it is necessary to explain certain terms. By normal angular mode of union, or Type 1, we refer to the acute angle (Fig. 4) formed by the cystic with the hepatic ducts when they unite to form the common duct. This type, up to the time of the publication of Ruge's paper, was thought to be the only form of mode of union of the two ducts. Type 2, or parallel mode of union, refers to those cases in which the cystic runs parallel to the hepatic duct for a variable distance, the two ducts being held together by a more or less firm connective tissue septum. If the two ducts run parallel for only a short distance, as, 2.5 cm., it is called the "short parallel" type, while if they take a parallel course for a longer distance, as, 5 cm. or more, the term "long parallel" type is applied. In my own observations I have used the term "short parallel" for those cases (Fig. 6) in which the two ducts run parallel to the upper border of the duodenum, and "long parallel" for the cases (Fig. 7) in which the two ducts run parallel until they unite a short distance above the ampulla, that is, within the head of the pancreas. The third of the chief divisions of mode of union is called the "spiral type." Here the cystic duct winds either around the front (Fig. 8) or the posterior surface of the hepatic duct (Fig. 9) before entering it to form the common duct. Thus the cystic duct can describe either a quarter, half, three-quarters or complete spiral around the hepatic duct.

Both of these two variations—the parallel and the spiral type—are, as we shall see, of the utmost importance from a surgical standpoint. Kunze failed in his thirty-nine cases to find any variations of the spiral type.

I became interested in the subject of anomalies of the blood vessels and bile ducts after a severe hemorrhage occurred from an anomaly of the cystic artery during a cholecystectomy, and decided to study the relative frequency at least of the modes of union in a larger number of individuals than any previous investigator. I have observed the various modes of union of the cystic and hepatic ducts in 100 necropsies, the material for which I obtained through the cooperation of the Pathological Department of the Cook County Hospital. My results can be best understood when compared with those of Ruge, Kunze and Descomps in the accompanying table. It is necessary, however, to call attention to the fact that my own statistics were the result of 100 observations, while those of the others were considerably smaller, namely, Ruge 43, Kunze 39 and Descomps 50; hence my own percentages are of more value as to relative frequency of the various types of anomalies.

FREQUENCY OF MODES OF UNION OF CYSTIC AND HEPATIC DUCTS

	Normal Angular		Parallel		Spiral	
	No.	Per Cent.	No.	Per Cent.	No.	Per Cent.
Ruge (43 cases)	14	33	12	29	16	38
Kunze (39 cases)	20	51	19	49	..	..
Descomps (50 cases) ..	40	80	6	12	4	8
Eisendrath (100 cases).	75	75	17	17	8	8

A study of this table reveals the fact that the observations of Descomps and my own agree very closely. I feel confident that the spiral type does not occur as often as Ruge asserts, and that Kunze must have

overlooked some examples of this type if he did not find any. Our own specimens were prepared by injecting a 15 per cent. bismuth paste while warm through the fundus of the gallbladder and causing it to distend the cystic, main hepatic and common ducts so that dissection could be more readily carried out.

Roentgen-ray plates were also made of the modes of union, a far more accurate method than any previous observer had employed.

One of our specimens showed a condition of great surgical interest that has not been described elsewhere. In this individual the ducts from the right and left lobes of the liver did not unite until some distance beyond the hilum. The cystic duct was found lying (Fig. 10) in the fork between the right and left hepatic ducts and entered the anterior surface of the common hepatic duct to form the common duct.

I did not study the anomalies of the blood vessels because this subject had been thoroughly covered by Rio Branco and Descomps. We did, however, encounter many of the anomalies described by them as being of importance in biliary surgery (Figs. 2, 3, 4 and 5).

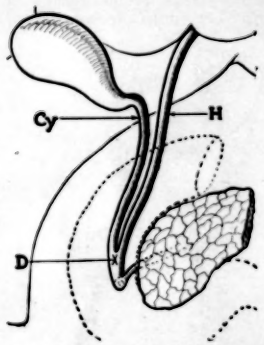

Fig. 7.—Long parallel type of mode of union of cystic and hepatic ducts. In this type the hepatic (*H*) and cystic (*Cy*) ducts run parallel to within a short distance of the ampulla of Vater. The common duct (*D*) varies in length from half an inch to an inch, lying usually within the head of the pancreas.

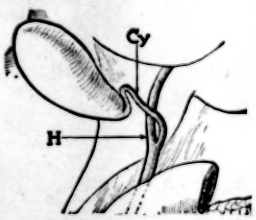

Fig. 8.—Anterior spiral type of cystic duct. The cystic duct (*Cy*) crosses the anterior surface of the hepatic duct (*H*) and then enters its left surface to form the common duct.

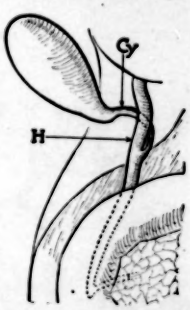

Fig. 9.—Posterior spiral type of cystic duct. The cystic duct (*Cy*) passes behind the hepatic duct (*H*) and enters its left surface to form the common duct.

Of what interest are these anomalies of the bile ducts and blood vessels to the surgeon? I am firmly convinced that a knowledge of their existence and the ability to recognize them during operations will prevent the majority of the accidents that have been reported. No doubt there are many other instances of unexpected severe bleeding and injuries of the ducts that have escaped publicity.

CONCLUSIONS

Anomalies of the blood vessels and mode of union of the cystic and hepatic ducts are of importance to the surgeon because the following conditions may occur:

1. *Blood Vessel Anomalies.*—(*a*) When the right hepatic artery runs close to the cystic duct and neck of the gallbladder as in Figure 3, or when the hepatic artery arches far to the right of the main hepatic duct, a segment of the wall of the right hepatic artery may be torn off during cholecystectomy.

(*b*) When the right hepatic artery (Fig. 2) or the cystic artery (Fig. 4) crosses the front of the main hepatic duct, they may be torn during removal of calculi from the cystic or hepatic ducts. The same is true when the main trunk of the gastroduodenal artery or a large branch crosses the lower end of the common duct (Fig. 5).

(*c*) When the cystic artery arises from the gastroduodenal (Fig. 1), it can be easily overlooked and severe hemorrhage occur. When two cystic arteries are present, one of them can be divided unless the possibility of such an anomaly is thought of.

2. *Bile Duct Anomalies.*—(*a*) The short parallel type (Fig. 6) is chiefly of interest because such a cystic duct is firmly adherent to the hepatic duct, and rough manipulation may tear off a portion of the wall of the adjacent hepatic duct. The short parallel type was found in eleven of 100 bodies.

(*b*) The long parallel type (Fig. 7) is of interest for the reason just given and in addition thereto for two others: first, a calculus lying in such a long duct may compress the hepatic duct and give rise to obstructive symptoms like those of a calculus in the hepatic or common duct, and second, our experimental work[6] has shown that a duct may dilate and form a new gallbladder and be the cause of a recurrence of symptoms. The long parallel type was found in six of 100 bodies.

(*c*) The spiral types (Figs. 8 and 9) are of interest, first, because a calculus lying in them may compress the hepatic or common duct and simulate the presence of calculi in these ducts; secondly, too strong traction of the gallbladder during cholecystectomy may tear off such a spiral duct and the torn proximal end will be difficult to identify; finally, if we wish to remove calculi from such a spiral duct or wish to excise the duct itself, we must bear in mind that the duct lies in the closest proximity to the hepatic duct throughout its course. I have found the anterior spiral type in five and the posterior spiral type in three of 100 bodies.

(*d*) The common duct is extremely short in both the short and long parallel types, especially in the latter, varying in length from 1 to 2.5 cm. The common duct varies greatly both in length and caliber in normal individuals.

30 North Michigan Avenue.

6. Eisendrath, D. N., and Dunlavy, H. C.: The Fate of the Cystic Duct after Cholecystectomy: An Experimental Study, Surg., Gynec. and Obst., 1918, **26**, 110.

ABSTRACT OF DISCUSSION

DR. WILLIAM D. HAGGARD, Nashville, Tenn.: We are encountering so many pathologic conditions in the gallbladder and ducts that it behooves us to be on our guard for these abnormalities. We ought to be very careful of the common duct itself, because it can be injured so easily, and sometimes you can hardly explain how. In one case we had a rather small gallbladder and we took a little bulging to be the ampulla, of which Dr. Eisendrath spoke. It was opened accidentally and bile and stones escaped. It was so large that it appeared to be the gallbladder. I should not have believed such a condition possible. In the meantime the gallbladder had been amputated and the duct cut loose to the liver. Fortunately, after removing the obstruction at the ampulla of Vater, we were able to unite it to the cut divisions of the two hepatic branches.

DR. E. E. MONTGOMERY, Philadelphia: I had one experience in which a patient had undergone a cholecystectomy, and subsequently a calculus of some size formed in the remnant of the cystic duct. Such an occurrence emphasizes what we have heard as to the importance of the removal of the cystic duct flush with the common duct, thus preventing the existence of a stagnation of the flow.

DR. J. A. ATTRIDGE, Port Huron, Mich.: I had a case in which I could not find any gallbladder. The patient had symptoms of obstruction and I found two stones in what I presumed to be the common duct. We were able to remove them, but we could find no evidence whatsoever of the gallbladder. In looking up the literature at my command I find only three such cases reported.

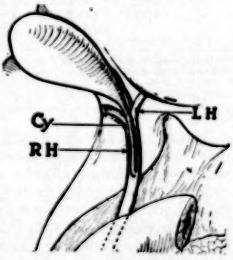

Fig. 10.—Unusual mode of union of cystic and hepatic ducts. Right (*R H*) and left (*L H*) hepatic ducts unite far beyond the liver, and the cystic artery passes through the fork between the two branches of the main hepatic duct. The cystic duct (Cy) enters the anterior surface of the common hepatic duct.

DR. DANIEL N. EISENDRATH, Chicago: A stone in a cystic duct lying parallel to the hepatic duct can compress the common duct and cause symptoms simulating those of obstruction to the common duct. This is mentioned in one of the cases of the same form of anomaly referred to by Kehr in his book. I could not take up in this paper the subject of abnormalities of the gallbladder. We did not encounter any of the unusual types of gallbladder mentioned in the discussion. There are statistics on the absence of the gallbladder, but the percentage of its occurrence I do not know. We have all sorts of abnormalities of the gallbladder and I encountered one not long ago which may be of interest to you. In this instance a diverticulum of the gallbladder projected from the main portion of the gallbladder and contained fifty-six stones. The accessory hepatic ducts emptied not in their normal manner into the main hepatic duct, but into the gallbladder itself, which is very unusual.

Effect of Habit in the Choice of Food.—Established habits in the choice of food are not very readily changed. When a new dietary is adopted in opposition to the dictates of appetite and pursued under protest, an unconscious reduction of intake may be expected. Some loss of weight may follow, but equilibrium at a new level will ordinarily be established. Few of us have discerned the simple principle to which Lusk has lately called attention; that we can be large people, maintained by large rations, or much smaller people with a much lighter requirement. Whether the reduction is to to be desired or not depends on the original condition. For a considerable fraction of the adult population weight reduction is calculated to add to the expectations of life.—Percy G. Stiles, *Health News.*

THE THERAPEUTICS OF TETANUS*

HERMANN B. GESSNER, M.D.
NEW ORLEANS

The measure of the value of therapeutic methods must necessarily be the clinical results. Too often conclusions relative to these results are hastily formed on the basis of a small number of cases. This is especially true of tetanus.

In order to form a just estimate of the relative value of the several methods of treatment of this disease in civil practice, I have studied 427 case reports from the records of the Charity Hospital of Louisiana located in New Orleans. From among these cases, recorded in the years from 1906 to 1918, I have eliminated twenty-five cases of tetanus neonatorum, believing that the several factors affecting these cases, such as birth trauma, nutrition and syphilis, would make it difficult for me to arrive at just conclusions regarding the special therapeutics of tetanus. Thirty-four cases were eliminated because of incomplete data or because the diagnosis seemed not sufficiently well established. Thus 368 case reports were available, a number which seemed sufficient to justify comparisons of some value as between rival methods of cure.

As a preliminary to the detailed study of these cases, I have thought it of interest to compare the mortality

TABLE 1.—MORTALITY BY DECADES

Period	Discharged	Died	Total	Mortality, per Cent.
1840-1849 (Incomplete)	5	11	16	68.7
1850-1859	17	70	87	80.4
1860-1869	14	43	57	75.4
1870-1879	17	58	75	77.3
1880-1889	13	68	81	83.9
1890-1899	35	117	152	76.9
1900-1909	54	119	173	68.7
1910-1917 (7 years)	105	229	334	68.5
Mortality before and after introduction of serum:				
1840-1889	66	250	316	79.1
1890-1917	192	465	657	70.7

by decades, going back to the earliest records available. These records, as shown by Table 1, give a mortality of 68.7 per cent. in the decade from 1840 to 1849, varying up and down through a maximum of 83.9 per cent. in the period from 1880 to 1889, then coming steadily down to 68.5 per cent. in the period from 1910 to 1917, the current period. Comparing decades, we find the gross undifferentiated mortality about the same now as it was seventy years ago.

Comparing the period before the introduction of antitoxic serum with that subsequent to this epoch-making innovation, we find that the period from 1840 to 1889 gives a mortality of 79.1 per cent., and from 1890 to 1917 a mortality of 70.7 per cent. It should be mentioned here that throughout this paper all patients discharged have been contrasted with all patients that died, without considering that some of those discharged afterward died. This fact tends to make the mortality less than it would be if these cases were eliminated. The reduction in mortality from 79.1 per cent. to 70.7 per cent., while not insignificant, is small compared with that in the other diseases, such as diphtheria and meningitis, in which antitoxic serum is employed. We must admit that we have progressed but little in the treatment of this disease and that strenuous efforts

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

must be made to correct our errors and lessen the heavy mortality rate.

PROPHYLAXIS IN THREE HUNDRED AND SIXTY-EIGHT CASES

Taking up the question of prophylaxis, in our 368 authentic cases of tetanus reported during a period of twelve years, we find twelve patients, each of whom received a preventive dose of serum, of whom four died—a mortality of 33⅓ per cent. Of these twelve cases, two should have had the dose repeated because of continued suppuration in wounds originally liable to tetanus infection. In one of them, suppuration in an arm-stump continued forty-four days before onset; in another there was metatarsal necrosis, following a gunshot wound, for seventy-two days before onset. Experience has shown that in patients presenting likelihood of tetanus infection the preventive dose should be repeated after ten days if suppuration continues. This precaution is very generally neglected by surgeons in the charity hospital. Continuing the analysis of the cases of twelve patients who developed tetanus notwithstanding a preventive dose of antitoxin, we find that four received this dose from five to eight days after the injury, three recovering and one dying.

It is the duty of the surgeon to inquire whether patients suffering from accidental injury and coming under his care after first aid has been given, have received antitetanic serum. Its prompt administration, even after the lapse of several days, may avert the disease or diminish its severity. Elimination of the six cases mentioned leaves six unexplained cases of tetanus following preventive doses in the course of twelve years, or one case for every two years. Though serum did not prevent tetanus in these twelve cases, it appears to have lessened the intensity of the disease, as the mortality for the series was 33⅓ per cent.

TABLE 2.—COMPARATIVE MORTALITY IN CASES OF TETANUS UNDER DIFFERENT METHODS OF TREATMENT

Method of Treatment	Adults			Children			Total	
	Cases	Deaths	Mortality, per Cent.	Cases	Deaths	Mortality, per Cent.	Cases	Mortality, per Cent.
Serum subcutaneously given	48	33	76.7	51	33	64.7	94	70.2
Serum introduced into the muscles, nerves, veins, subarachnoid space	37	28	75.6	16	8	50.0	53	67.9
No serum given; treatment by sedatives, excluding chlorbutanol	54	38	70.3	55	40	72.7	109	71.5
No serum given; treatment by sedatives, including chlorbutanol	52	30	69.2	40	25	62.5	92	66.3
Magnesium sulphate introduced subcutaneously or into subarachnoid space	11	8	72.7	9	6	66.6	20	70.0
Totals	197	143	72.5	171	112	65.4	368	69.2

Assuming that all the patients returned to the charity hospital for treatment, and taking into consideration the large number of punctured, lacerated, crushed and gunshot wounds treated annually in the accident service (133,102 cases of all kinds treated in the accident service during the period from 1906 to 1917), it seems clear that the preventive use of antitetanic serum has fully established its claim to recognition. This experience leads us to urge that a campaign of education be initiated among the less well informed classes of our population, in order that the mortality from this preventable disease may be reduced to the vanishing point. Too often the injured of these classes content themselves with the use of bacon fat, turpentine and cockroach poultices for punctured wounds when a preventive dose of serum would insure safety and prevent the pain, disability and loss of life consequent on the neglect of this precaution. It may be well, before I leave this phase of the subject, to refer to the question of anaphylaxis and of primary hypersensitiveness to serum. I have never known a death to result from either cause. In all patients exposed to tetanus infection the serum should be given, regardless of the remote danger from animal proteins.

EFFECTS OF VARIOUS METHODS OF TREATMENT

We now come to a study of the comparative mortality under different methods of treatment, as shown in Table 2. From this table it will be seen that the mortality rate for children was markedly lower than that for adults, except when the treatment was by sedatives, excluding chlorbutanol, being here 72.7 for children as compared with 70.3 for adults. Cases treated without serum by sedatives, including chlorbutanol, were compared with those treated without serum by sedatives, excluding chlorbutanol because of the claims made for this drug. As a matter of fact, the chlorbutanol cases gave the lowest joint (adult and children) mortality (66.3 per cent.), slightly lower than that for serum given otherwise than subcutaneously. Our results from serum given otherwise than subcutaneously, a method highly praised by Ashhurst of Philadelphia, have in the mass proved disappointing, though individual casts have shown striking results. For children (24 cases) it gave the lowest mortality (50 per cent.).

TABLE 3.—COMPARATIVE MORTALITY OF CASES OF TETANUS UNDER VARIOUS TOTAL DOSES OF SERUM

Dose	Adults			Children			Total	
	Cases	Deaths	Mortality, per Cent.	Cases	Deaths	Mortality, per Cent.	Cases	Deaths	Mortality, per Cent.
Less than 5,000 units	33	26	78.7	54	36	66.6	87	62	71.2
Between 5,000 and 10,000 units	24	20	83.3	10	4	40.0	34	24	70.6
Over 10,000 units	17	11	64.7	6	2	33.3	23	13	56.5

EFFECTS OF TREATMENT ACCORDING TO DOSAGE

Thinking that the disappointing results from serum, whether given hypodermically or introduced into veins, muscles, nerves and subarachnoid space, might be due to the small quantity employed, I have tabulated the cases according to the quantity administered, as shown in Table 3.

The figures showed a definite improvement with the increase of the doses, with the sole exception of those for the adults receiving between 5,000 and 10,000 units. In the children especially the drop from 66.6 to 40 per cent. and to 33.3 per cent., as the dose went up, was striking. As the large doses were those given otherwise than subcutaneously, it is a question whether the size of the dose or the method of administration is to be credited with the better results. It is interesting to note that one adult patient in a fatal case received in nine days 192,875 units, given otherwise than subcutaneously.

As a matter of interest, the mortality for varying periods of incubation and for the varying duration of illness before the patients' admittance to the hospital was analyzed. The accepted idea that the mortality varies inversely with the length of the period of incubation was supported by our analysis (Table 4). Seventy-five cases with an incubation period of less than seven days had a mortality of 82.6 per cent. Ninety-six cases with an incubation period of more than seven days had 59.3 per cent. mortality. Yet one patient with forty-four days of incubation died and one with three days recovered.

One might have thought that patients treated in a hospital shortly after the onset of symptoms would give a smaller mortality rate than those remaining ill outside for some days before treatment was instituted. Our figures, as set forth in Table 4, show that ninety patients, ill for less than two days before admittance, had a mortality rate of 75.9 per cent.; that forty-three patients, ill from two to seven days, had 58.1 per cent., and that thirteen patients, ill for more than seven days, had 38.4 per cent. Possibly the reduced mortality after several days was due to the elimination of the worse, fulminating patients, who died within two or three days.

TABLE 4.—COMPARATIVE MORTALITY OF CASES OF TETANUS ACCORDING TO (A) PERIOD OF INCUBATION, AND (B) DURATION OF ILLNESS BEFORE ADMITTANCE TO HOSPITAL

	Adults			Children			Total		
	Cases	Deaths	Mortality, per Cent.	Cases	Deaths	Mortality, per Cent.	Cases	Deaths	Mortality, per Cent.
A: Duration of Incubation:									
Under seven days	67	56	83.5	8	6	75.0	75	62	82.6
Over seven days	86	51	59.3	10	6	60.0	96	57	59.3
B: Duration of Illness:									
Under two days	90	68	75.5	14	11	78.5	104	79	75.9
Two to seven days	39	24	61.5	4	1	25.0	43	25	58.1
Over seven days	12	5	41.6	1	0	0.0	13	5	38.4

MINOR FACTORS IN TREATMENT

Another element in the treatment of tetanus, which does not appear from these figures, lies in the personal equation of the attending surgeon and nurses. These patients require a detailed care for nutrition, skin cleansing, bowels, etc., which is very laborious. They need the greatest degree of quietness and gentleness. Too often their cases are looked on as necessarily fatal, and, as unwelcome guests, they are screened off not only from view but also from active attention. These cases should be concentrated in the hands of attendants sanguine of obtaining good results by hard work and anxious to lessen the mortality of this dread disease.

CONCLUSIONS

1. All victims of accidental injury of a punctured, lacerated, crushed or gunshot character, especially when associated with foreign bodies or with exposure to street, garden or stable contamination, should receive 1,500 units of antitetanic serum at the first treatment.

2. All patients of this type coming secondarily under observation should receive the serum, though several days may have elapsed.

3. If in this class of cases suppuration continues, the administration of the serum should be repeated at intervals of ten days, as we have reason to believe that its protective influence does not last beyond this time.

4. Patients coming under treatment for tetanus should be isolated in quiet, comfortable rooms, under the care of surgeons and nurses interested in their treatment and confident of improving on past results by devoted attention.

5. Treatment should be by large doses of serum, of not less than 10,000 units to the dose. Administration by the intravenous, intraneural, intramuscular and subarachnoid methods should be more extensively employed for the purpose of bringing out their value more thoroughly.

6. Food and water, skin cleansing, the care of the bowels and the use of sedatives to calm anxiety and relieve pain must all receive the closest attention.

ABSTRACT OF DISCUSSION

DR. SAMUEL J. MELTZER, New York: I am going to demonstrate three groups of lantern slides. The first group shows the rapid favorable action of magnesium sulphate on tetanus. The first picture of this group shows the animal in extreme tetanus with trismus and opisthotonos. In the second picture you see the same animal without opisthotonos and trismus, and the general tetanus is greatly diminished You see the buret from which the animal received an intravenous injection of magnesium sulphate. In the third slide all manifestations of tetanus are gone; the animal received more of the magnesium solution. The cannula from the jugular vein was now removed. In the fourth picture you see the animal lying on its abdomen, the head slightly raised, in a normal position on the floor. Fifteen minutes later the animal was running about in the laboratory in a natural condition.

In the second group of slides I wish to demonstrate the danger of an overdose of magnesium and the resuscitation from it. In the first slide you see the animal with trismus and moderate tetanus. In the second slide the animal is completely relaxed and in a dying condition; there were no respirations and the pulse was extremely feeble. The animal received now an intravenous injection of calcium chlorid. In the third slide you see the same animal two minutes later, standing up in a normal fashion.

In the third group the favorable effect of subcutaneous injections of magnesium is illustrated. Four animals received simultaneously similar lethal doses of magnesium. Two were kept as controls; the other two received daily subcutaneous injections of magnesium sulphate. The first picture shows six days later the two control dogs; one in extreme tetanus and the other dead. The second picture shows the treated animals; they are relaxed, lying on their abdomen, their heads slightly erect, in a normal fashion. I wish to emphasize that the use of magnesium sulphate does not exclude the simultaneous treatment by serum.

Permit me to add a few words regarding the use of statistics. If they should have any value they must be analyzed with great care. With regard to magnesium in tetanus, let me quote two illustrations One instance occurred in the progressive clinic from which Dr. Gessner hails. An advanced case of tetanus received an intraspinal injection of magnesium. Next day the patient died with pulmonary edema. The conclusion was drawn that magnesium is liable to cause pulmonary edema. Now, pulmonary edema is a frequent complication of tetanus. In thirty-two necropsies of untreated cases of tetanus, Frank found severe pulmonary complications, including edema, in twenty-six. Another striking illustration are the statistics from the English committee. Their thirty cases include the administration of Epsom salts by the mouth and by the rectum, and contains not a single case which was treated by magnesium in a proper manner. On the other hand, Pribam, in October, 1916, reviewed 148 articles from the Teutonic literature. He says that at present magnesium

sulphate is the best palliative remedy we possess for the treatment of tetanus.

Dr. Albert J. Ochsner, Chicago: The fact that Dr. Gessner, with his opportunity for observing the enormous material that his hospital presents, is giving attention to this subject, means that within a few years we will have practical results that will be worth while So far as the use of antitoxin is concerned, I have become more and more convinced from our experience that it is the very large dose that gives the patient a chance. This has lately been confirmed by a very large number of observations in connection with the Italian army. During the campaigns of 1914 and 1915 in France, Professor Tezzoni discovered that there was a varying incidence. The lowest incidence was about 0.5 per cent., the highest from 2 to 2.5 per cent. (I think these figures are too conservative.) These figures were unsatisfactory to Professor Tezzoni. Most, if not all, of the wounded had received a prophylactic dose of tetanus antitoxin. He suspected that a larger prophylactic dose might result in greater efficiency of the treatment. Accordingly, he instituted a series of experiments on animals in his own laboratory at Bologna. These experiments developed the fact that about ten times what had been previously regarded as a maximum prophylactic dose could be administered with safety.

Immediately he made this announcement to the surgeons of the Italian army and thereby established a new standard of treatment. His method of administration was through four avenues: subcutaneously, intravenously, intermuscularly and intraspinally.

He then instituted a personal inspection of the Italian wounded. He observed 40,000 gravely wounded soldiers, all of whom had received the heroic prophylactic dose. In this group eleven cases of tetanus developed. Four patients died. Three lay in No Man's Land one, two and three days, respectively, before receiving the prophylactic dose; the history of the fourth case was not available; hence but one fatal case out of the 40,000 cases remains unaccounted for.

The 40,000 Italians each received ten times the usual dose of 1,500 units which Dr. Gessner has given. During the last few years we have applied this principle in our clinic.

Dr. W. Estell Lee, Philadelphia: In view of Dr. Meltzer's speaking of the lack of value of statistics, it may seem presumptious of me to quote statistics. I think, however, it would be very unfortunate for medical men, particularly those who may have to deal with war wounds, to have any doubt cast on the value of the prophylactic use of antitetanic serum. The experience is a personal one, the factors are constant because it was the same hospital, the same nurses, the same surgeons. The French wounded, 250, were received at this hospital after the battle of the Marne. Over 60 per cent. of them had clinical symptoms of tetanus and no antitoxin. From shortly after the battle of the Marne until after the battle of the Champagne over 4,000 wounded were received. In none of them were the wounds excised, as is now done, and unfortunately in most of them the wounds were not even incised, and no antiseptic solutions were used of any kind. In that 4,000 received during the administration of the antitetanic serum, only twelve cases of tetanus developed in those we cared for. A little more striking was the first series that came shortly after the introduction of the use of antitetanic serum. Five hundred cases came during a period of three months from the first attack at Verdun to the battle of the Champagne. In these 500 only one developed clinical symptoms of tetanus while in our care. Our faith in the antitetanic serum as a prophylactic measure had become so fixed that we immediately tried to find the Poste de Secours from which he came. Each man received had his previous medical treatment on his card. This man had a record of a hypodermic, and we assumed and he told us that that hypodermic was one of antitetanic serum. After investigation we had a reply from this medical officer saying that what he had given was morphin and not antitetanic serum. Any one who has seen the wounded who have not received antitetanic serum and those who have, can have no doubt of its value, and I feel that it would be a great mistake for us to expect to receive by excision of wounds or the use of antiseptics the protection against this dread complication that the serum has given.

Dr. C. J. Holman, Mankato, Minn.: I would like to add a few words as to what has been said in reference to the use of magnesium sulphate, as suggested by Dr. Meltzer and explained by him. I have had an opportunity to treat about a dozen cases of tetanus. My first case was one of suppurative appendicitis. By the aid of magnesium sulphate and the antitetanic serum, the man is still living. The next patient I saw had a crushing injury to the hand. She was brought into the hospital on the fourth or fifth day and died after the third injection of magnesium sulphate. She probably would have died sooner than that without the magnesium sulphate. I did not attribute her death to the magnesium sulphate. In another case of crushing injury to the hand, the patient recovered in about three weeks. He was brought to the hospital on about the seventh or eighth day. A man who had let the hand fall into the knives of a corn shredder also made a good convalescence. He was given magnesium sulphate and also the antitetanic serum. The dose was, I remember it, 10 minims of a 25 per cent. solution for a person weighing about 150 pounds. The dose was increased so that it was given in large enough amounts to control the spasm, to release the spasm and make the patient comfortable. Another man had a wound of the knee produced by the kick of a gun. Of course, he contracted tetanus from his soiled clothing. The symptoms began about the tenth day. Magnesium sulphate, intraspinally, controlled the spasms and made him fairly comfortable, though he died about ten days later.

Dr. Clark D. Brooks, Detroit: The reason the mortality has been high is simply that the prophylactic dose is not given early. I always give a prophylactic dose in compound fractures, punctured or lacerated wounds. Our surgical intern does not wait for directions from us; he gives the patient a prophylactic dose of antitetanic serum. The intern is instructed that if the patient sustained an injury several days before he gets 20,000 units. That is the reason we are getting a lower mortality. We also use magnesium sulphate intravenously and intraspinally. As far as we can see it does not matter. We will not lower mortality until we give our patient prophylactic serum. Every day that the patient has the wound and is untreated the higher the mortality. He should have 5,000 to 10,000 units every second day, and 50,000 units is not too large to give a patient as soon as you see him when he has tetanus four or five days. We give as high as 100,000. I have not seen bad results from large doses, but have seen bad results from small doses.

Dr. H. B. Gessner, New Orleans: What I meant to bring out in my paper was, first, the importance of prophylaxis, and second, the fact that we do not know positively the best way to treat tetanus. The idea of my paper was suggested to me by a colleague in the hospital. He knew I was interested in tetanus; he stopped me and asked me how to treat a case. I told him I did not know; then determined to look up our results with the different methods.

I have to admit the truth of what Dr. Meltzer says in regard to the question of statistics. It is easy to go astray in using them. However, I believe, when you have a large number of cases it is possible to draw conclusions. Referring to the magnesium treatment, I have had two consecutive cases of tetanus recover under magnesium sulphate given hypodermically. On the other hand, I recall a little colored boy who punctured his foot on a nail on Monday; Friday he had symptoms of tetanus; on Saturday he came into my hands. I gave him serum intravenously, intramuscularly, intraneurally and into the subarachnoid space. Within three days he was much better, and within a week he made a good recovery. Every one can recall cases of recovery from tetanus under individual methods of treatment. The question is, What method offers the best prospect of cure? In seeking the answer to this question, I believe, after all, we must depend on a large mass of statistics, taking stock and finding out where we stand.

Regarding pulmonary edema, it is a fact that there is some relation between tetanus and lesions of the lungs. I can recall cases in which the patients died of pneumonia. In conclusion, let me say that I am encouraged to try magnesium sulphate more persistently than before.

THE ACTIVE CONSTITUENT OF THE THYROID

CHEMICAL GROUPS THAT ARE RESPONSIBLE FOR ITS PHYSIOLOGIC ACTIVITY *

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Since Baumann,[1] in 1896, discovered that iodin is a normal constituent of the thyroid gland, it has been obvious that the isolation in pure crystalline form of the compound containing iodin was necessary before we could know the function of the gland and the relation of iodin to this function.

There are many mechanical difficulties involved in the isolation of the iodin compound. It occurs at best in one part in 4,000, and during many months of the year the amount present is not more than one part in 10,000 of fresh glands. For the completion of this work, eight years of practically continuous investigation and more than 2 tons of thyroid glands have been used. Some 20 gm. of the active constituent in pure crystalline form have been separated. The investigation, besides involving the separation of this substance, has also included the determination of its chemical formula both empiric and structural, together with its synthesis, and the investigation of its physiologic action as well as the treatment of clinical conditions. The ultimate analysis of the compound is: C, 22.74; H, 1.72; O, 8.21; N, 2.38; I, 65.10. Its structural formula is shown in Figure 1.

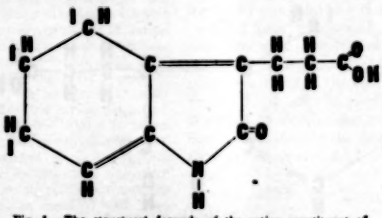

Fig. 1.—The structural formula of the active constituent of the thyroid.

The physiologic investigation of this substance has demonstrated that in pure crystalline form it will increase the energy output of the animal organism. In emphasizing this fact I am using Plummer's explanation for the function of the substance. Heretofore the activity of the thyroid has been studied and expressed mainly in clinical terms. Instead of saying that this iodin compound will relieve the symptoms of myxedema, that it will produce hyperthyroidism, that it has this or that effect on the kymograph, that it affects the pulse rate, blood pressure, nitrogen metabolism, etc., I shall state its action in a definitely measurable quantity: One third of 1 mg. of this substance increases the basal metabolic rate of an individual weighing approximately 150 pounds, 1 per cent. If the basal metabolic rate of an individual of this weight is 30 per cent. below normal, the administration of 10 mg. will raise the metabolic rate to normal; and if it is 21 per cent. below normal, the administration of 7 mg. will raise it to normal. The administration of greater amounts of the substance will increase the basal metabolic rate to a figure just as high as is compatible with life.

Plummer's definition for the function of the thyroid is that it determines the amount of energy that any given cell within the body can produce on stimulation either from within or without. It determines the quantum of energy that it is possible for any given cell to produce. When this is emphasized and the problem is faced in this light, the question of the function of the thyroid assumes an entirely new aspect.

The moment the metabolic rate increases, fundamental changes are produced; for instance, the pulse rate increases, the pulse pressure must increase, the rate of blood flow must increase, and if pushed long enough the body sugar, fat and proteins will be used up in greater amount than normal, meaning an increase in the carbon dioxid output and oxygen consumption, and an increase in nitrogen elimination. Symptoms due to subnormal activity of tissues will be relieved; in other words, the condition of myxedema will disappear. If the metabolic rate is carried high enough, so high that it approaches that found in hyperthyroidism, then the symptoms of hyperthyroidism will appear. All this has been demonstrated in a very large number of cases at the Mayo Clinic, so that not only has Plummer[2] shown that this substance is physiologically active, but he has expressed with mathematical exactness the function of the gland, as well as the normal physiology involved when the secretion of the thyroid functionates. This addition to our knowledge of physiology is incomparably greater than merely the knowledge that a certain substance isolated from the thyroid happens to possess demonstrable physiologic activity. Plummer's conclusions are based on his own observations, made in thousands of cases of goiter, and on his knowledge of physiology. It is possible that these conclusions could not have been satisfactorily proved from existing data; but by the use of this substance as a tool, his hypothesis has been entirely substantiated, and now the function of the thyroid can be expressed as a physiologic process and not in terms of anatomic changes and clinical syndromes.

It was of great interest, therefore, to determine the chemical nature of this iodin-containing compound so fundamentally involved in normal physiology. Analysis has shown that it contains an indol group with the iodins undoubtedly attached to the benzene ring, and that on the carbon atom adjacent to the imino group of the indol ring there is an oxygen atom. For reasons given hereinafter, it appeared desirable to emphasize the presence of the oxy-indol nucleus and it appeared equally desirable not to emphasize the presence of iodin. The substance was, therefore, named "thyro-oxy-indol," which has been shortened to "thyroxin" for everyday reference to the substance. At first we attempted to show that the activity of thyroxin was due to the oxygen condensing with the amino group of an amino-acid, and the carboxyl group of the amino-acid reacting with the imino group of thyroxin. It has been shown, however, that this does not occur; but that the physi-

* From the Mayo Foundation.
* Read before the Section on Pharmacology and Therapeutics at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

1. Baumann, E.: Ueber das normale Vorkommen von Jod im Thierkörper, Ztschr. f. physiol. Chem., 1895-1896, **21**, 319-330; ibid. 1896-1897, **22**, 1-17.

2. Plummer, H. S.: The Thyroid Hormone, and Its Relation to Metabolism, presented before the Association of American Physicians, May 6, 1918, Atlantic City.

ologic activity of the substance is produced by the CO-NH groups has been demonstrated as follows:

The injection of pure thyroxin is followed by a very definite and marked physiologic response. When the hydrogen on the imino has been replaced with acetyl, the substance loses its physiologic activity and the injection of the substance is without demonstrable effect. Investigation of the acetyl showed that in alkaline solution the indol form of the compound no longer exists, but that there is hydrolysis of the CO and NH groups resulting in the opening of the ring and the formation of COOH and NH_2 (Fig. 2). Further investigation showed that thyroxin behaves in the same way, and that it exists within the body, not in the closed ring form, such as is present in indol, but in the form COOH NH_2. The ability of the indol ring to open in this manner furnishes the first concrete conception of how the substance behaves chemically within the body. The fact that both thyroxin and the acetyl derivative exist in open form suggests that the reason for the inactivity of the acetyl is interference with the chemical reactions associated with the NH_2 group of thyroxin. One is at once struck with the fact that the open and closed forms of thyroxin bear to each other the same relation as does creatin to creatinin, and that the same relation exists between amino-acids and the form in which amino-acids are united in protein. Establishing these active groups emphasizes the importance of the chemical nucleus CO NH and COOH NH_2 within the body, which appears to be a necessary structure for the carrying out of chemical changes leading to the production of energy.

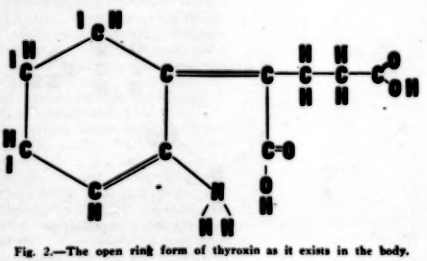

Fig. 2.—The open ring form of thyroxin as it exists in the body.

Patients with complete atrophy of the thyroid have basal metabolic rates approximately 40 per cent. below normal. It has been shown that administration of thyroxin alone can bring back and maintain the normal metabolic rate in these persons. But in complete atrophy of the thyroid, the complete or nearly complete absence of thyroxin may be assumed. The question arises as to what maintains energy output from 100 per cent. below normal, which would be death, up to 40 per cent. below normal, the point to which basal metabolism sinks in the absence of thyroxin. May it not be the other chemical substances in the body possessing the same grouping that occurs in thyroxin? These are amino-acids and proteins, creatin and creatinin, and a few other less well known compounds. It seems probable that on the administration of thyroxin a reaction that has been carried on within the body by other compounds is merely increased in rate, but that there is no other difference or disturbance of the reactions that have been going on.

In regard to the relation of iodin to the activity of thyroxin, the presence of iodin in the compound must exert some influence, and it seems not improbable that the presence of iodin renders the active groups more reactive. In the absence of iodin it would take a greater working pressure to bring about the reaction.

The substitution of hydrogen, chlorin or bromin for the iodin would undoubtedly be followed by an alteration in the degree of reactivity of the substance, but its gross chemical nature and properties would not be altered thereby. That the iodin breaks off from the molecule and is used as iodin per se for any purpose seems absolutely impossible because Plummer has shown that this substance functions for as long as from fifteen to twenty-one days after being administered, and that it acts as a true catalyst, being used over and over, hour after hour, without destruction except at a very slow rate. It is finally removed from the body either by actual destruction or by slow loss in an undestroyed form. Our knowledge of other catalytic agents shows that poisoning of catalysts is common if not universal, so that its slow destruction is to be expected.

The exact chemical reactions involved when this substance functions are still unknown, but that the substance possesses the formula as shown above is established by the ultimate chemical analysis of its derivatives. That the active groups present in thyroxin are a necessary mechanism for the production of energy within the body seems highly probable, and it is of great interest and significance that there exists a close analogy between this substance, whose exact effect on metabolism we know, and other substances, creatin, creatinin, amino-acids and proteins, which are also intimately associated with reactions occurring within the animal organism. Are these substances also concerned in the maintenance of the basal metabolic rate?[3]

ABSTRACT OF DISCUSSION

Dr. George N. Jack, Buffalo: I would like to ask Dr. Kendall why sometimes there is a development of thyroid trouble while taking iodin? I have three such cases. Two patients recovered on stopping the iodin; none of the three has a permanent goiter.

Dr. V. A. Lapenta, Indianapolis: There are only two things that I do not understand clearly: I believe Dr. Kendall wishes to convey the idea that the iodin content of the molecule is not responsible at all for its physiologic action, and that a compound, iodin-free, without changing the structural formulas of the active groups or the position of the COOH group is just as active as if the iodin was present. This somewhat alters our clinical knowledge of iodin relative to thyroid function. We cannot explain the severe exaggeration of symptoms in exophthalmic goiter on the administration of iodids and the beneficial effects of iodin in myxedema even without thyroid extract. Clinicians have observed this for many years.

Dr. Walter A. Bastedo, New York: I have been much interested in Dr. Kendall's finding that iodin is only secondary in the structure of the active substance; because, as we all know, animals are found from time to time without any iodin in the thyroid, and yet they are not diseased animals. It

3. In addition to the articles already cited, the following, by the author, will be found of interest:
A Method of Decomposition of the Protein of the Thyroid with a Description of Certain Constituents, Jour. Biol. Chem., 1915, **20**, 500-509.
The Isolation in Crystalline Form of the Compound Containing Iodin Which Occurs in the Thyroid: Its Chemical Nature and Physiological Activity, The Journal A. M. A., June 19, 1915, pp. 2042-2043; Tr. Assn. Am. Phys., 1915.
Studies of the Active Constituent, in Crystalline Form, of the Thyroid, Tr. Assn. Am. Phys., 1916, **31**, 134-145.
Recent Advances in Our Knowledge of the Active Constituent in the Thyroid: Its Chemical Nature and Function, Boston Med. and Surg. Jour., 1916, **175**, 557-562.
The Thyroid Hormone, Mayo Clinic Collected Papers, 1917, **9**, 209-336.

has been very difficult to explain how sheep and other animals lived and were healthy without iodin in the thyroid. It is quite probable, then, that in those cases something else takes the place of iodin in the compound; and that would show that iodin is only an incident in the makeup of the molecule and is not essential.

DR. E. C. KENDALL, Rochester, Minn.: The relation between the administration of iodin and thyroid trouble assumes two distinct conditions: One is the relief of goiter by the administration of iodin, and the second is the production of hyperthyroid symptoms by the administration of iodin. In the first condition, the gland is enlarged because it is stimulated, due to the insufficient amount of its active constituent available for the body. Administration of iodin, in this condition, allows the gland to manufacture its active constituent; the stimulus on the gland is, therefore, removed and the size diminished, possibly restoring it to normal. If encapsulated adenoma or a cystic condition is present, a mechanical factor enters which does not permit the gland to return to normal size.

The administration of thyroxin in large amounts produces typical hyperthyroid symptoms. It would, therefore, be expected that the administration of iodin in such amounts as to produce an excessive outpouring of thyroxin, would result in hyperthyroid symptoms. Besides these symptoms, due to the active constituent of the thyroid, there is still another condition, known as "iodinism," which is a distinctly different trouble.

Very small amounts of iodin given to an exophthalmic goiter patient sometimes produces clinical improvement, but it is not a curative measure. The relation between iodin and clinical symptoms is very difficult to explain, but it seems probable that the determination of the functionating groups in the active constituent of the thyroid will throw much light on the subject. It is possible to explain the toxic symptoms produced by the hyperplastic thyroid by assuming that an excess of its secretion is being formed. This can be disproved by the fact that the amount of iodin in the gland is lower than normal, which probably is not entirely explained by the immediate pouring out of the substance from the gland, although this may, in part, be the explanation. Another explanation is that the gland produces thyroxin without the iodin attached. The body would thus be supplied with possibly an enormous quantity of the functionating part of thyroxin, which could theoretically produce the effects that are known.

Iodin in myxedema depends entirely on the amount of active thyroid substance which is present. Myxedema may be due to a partial failure of the gland to maintain a normal supply of thyroxin, or to complete atrophy of the gland. In the first place, the administration of iodin would possibly enable the thyroid substance which is present to make sufficient thyroxin to relieve the symptoms. In the second condition no amount of iodin would avail because the gland, being completely atrophied, could not manufacture any of the active constituent.

In regard to the animals that have iodin-free thyroids, it seems probable that these fall into the same condition as in myxedema in which the gland is completely atrophied and the metabolic rate is below normal. In time this causes a clinical condition which is marked by edema and other well known signs and symptoms. However, the human being or the animal does not die. It is, therefore, apparent that something in the body can maintain the metabolic rate, at least up to 40 per cent. below normal. Reasoning from the analogy of the active groups in thyroxin, the question arises whether it is not creatin, amino acids and proteins in general that have this power.

The administration of corpus luteum for the relief of exophthalmic goiter has been tried. I am not in a position to discuss its merits, but I am certain that it is not a specific cure.

Syphilis.—The danger of syphilis to the community or individual is increased in proportion to the inadequacy of the treatment received by those suffering with the disease.—Vedder.

THE USE OF DICHLORAMIN-T IN THE PREVENTION AND CONTROL OF SURGICAL INFECTION *

WALTER ESTELL LEE, M.D.
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The attempts of surgeons, during the early months of the present war, to close gunshot wounds at the time of the primary operation were uniformly followed by disastrous results. Virulent infections of gas gangrene, streptococci, pneumococci, and other pathogenic organisms had invariably followed primary closure and it was therefore ordered that all gunshot wounds should be left open. This decision, of course, ordained that practically every gunshot wound was to become an infected wound.

At the present time surgeons of the allied armies are closing their wounds, when mechanically possible, at the time of the primary operation as a matter of routine, just as they would civilian wounds, and are obtaining primary union without infection in from 85 to 90 per cent. of the cases so treated.

After four years, military surgeons are now agreed that the most important factors in the prevention of infection in traumatic military wounds are: (1) Surgical treatment at the earliest possible moment; (2) the removal of all foreign bodies; (3) the complete removal of devitalized tissues; (4) the application of such a germicide as will not delay the time of the closure of the wound by the method of its application, and (5) the earliest possible closure of the wound when the foregoing procedures have been practiced.

When it is not possible to prevent infection by such measures, another problem is presented, namely, the control of infection. Here again the same principles should be followed: early operation, and removal of foreign bodies and dead and devitalized tissues; but, in our experience, the additional use of a germicide will be a definite aid in the control of these infections.

DISINFECTION METHODS REVOLUTIONIZED BY CHLORIN

Voluminous reports of results obtained in the treatment of gunshot wounds with the use of many germicidal agents appeared in 1915 and 1916, and still continue to appear. On careful analysis, it will be found that only in those cases in which the surgeon has practiced early operation, within three hours after the patient is wounded, and has effected the aseptic surgical removal of foreign bodies and dead tissues do the results in any way approach those reported by Carrel, Dehelly, Depage, Tuffier and Chutro, who, in addition to these surgical procedures, use Dakin's hypochlorite solution.

The experience of the surgeons of the American Ambulance during the last two and a half years is entirely in accord with that of the majority of surgeons who have served in the present war, namely, that chlorin preparations have proved superior to all

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

other germicidal agents. It is really revolutionary from the laboratory point of view that chlorin should be found to be applicable in any form for the treatment of infected wounds, for chlorin is a general disinfectant, and as such, it is to be expected that it should be a general protoplasmic poison, fully as destructive to tissues as to bacteria. It is an agent which destroys everything with which it comes in contact, unless very carefully controlled. Before Dakin developed his unique method of control, decidedly unfortunate results followed attempts to use such standard preparations as Javel water and Labarraque's solutions.

It is now Dakin's belief that the germicidal action of all chlorin preparations depends on substances resulting from the chemical reactions between the chlorin and the proteins of the tissues and exudates in infected wounds, which substances are known as chloramins.

These chloramins, unlike chlorin, are not destructive to the tissues and may be used in solutions as strong as 10 per cent. Thus with the chloramins, it is not necessary to employ the very weak concentrations which require the frequent applications, most essential when chlorin solutions are used.

At the Boston meeting of the American Surgical Association in June, 1917, Commander Robert G. LeConte, U. S. N. R., presented a preliminary report on "The use of dichloramine-T in the treatment of infections and infected wounds" which was based on experimental and clinical work started in December, 1916, at the Pennsylvania Hospital. In September, 1917, Major Edward Martin, M. R. C., was detailed to investigate the clinical value of dichloramin-T in the treatment of surgical infection, and Lieut. Paul A. Lewis, U. S. N. R., Capt. William F. Furness and Capt. Walter E. Lee were assigned to assist him.

The concluding paragraph of our first report on dichloramin-T expressed the attitude with which this investigation was undertaken. "One should not depend on a chemical agent to perform, in the prevention or treatment of suppuration in traumatic wounds, that which can and should be done quickly and thoroughly by mechanical means. Neither chemistry nor bacteriology can or should be expected to replace the mechanics of surgery. At best, these chemical germicides can react only on the bacteria with which they actually come in contact, which means a very superficial process. Therefore, at the primary operation all foci of infection, foreign bodies and dead and devitalized tissues must be removed, when possible, by surgical procedures and adequate drainage, dependent if indicated, should be provided."

PROPERTIES OF A SUCCESSFUL DISINFECTANT

Dichloramin-T has been found to be a germicide which possesses to an unusual degree the properties that make it possible to meet the conditions which Dunham has demonstrated govern the success of disinfection. Those properties are contact, time and mass — the mass of germicide. The irritation which accompanies the application of most germicides, limiting their use and governing their permissible concentrations, is negligible with dichloramin-T. Dichloramin-T can be used in solutions as strong as 10 per cent., the germicidal mass of such a concentration being forty times that of a 0.5 per cent. solution of hypochlorite. Because of the peculiar stability of this germicide in oil solutions and its unusual speed of disinfection, the required time of contact with the infecting organisms is readily maintained. Under average conditions its germicidal activity lasts about eighteen hours, in contrast to the thirty to sixty minutes of Dakin's hypochlorite solution. Dunham has found that its speed is eight times that of Dakin's hypochlorite, 800 times that of a 1:1,000 solution of mercuric chlorid and at least 2,800 times that of a 2 per cent. solution of phenol (carbolic acid). These tests were made in a uniform medium of blood serum and muscle extract.

Contact is essentially a mechanical problem, for the surgeon can place no dependence on the power of penetration of any known germicide. The development of a mechanical method to obtain, in traumatic and in infected wounds, the all-important contact between this agent and the infecting organisms has been the object of this investigation. At the present time, records have been obtained from 19,040 completed cases in civil surgical practice which have been treated with this agent. The patients in these cases have been treated in the Pennsylvania, the University of Pennsylvania, Germantown, Children's and Bryn Mawr Hospitals, and in the accident services of the Midvale Steel Works and the Remington Arms Company. Dr. Robert P. Cummings and Dr. George B. Sickel directed the work at the latter places.

CONCLUSIONS

After fifteen months' work, we have come to the following conclusion:

1. The use of dichloramin-T has definitely improved the results we have been able to obtain in the primary closure of traumatic wounds of the soft tissues, bones and joints.

2. In the treatment of superficial accessible surgical infections, the use of dichloramin-T has uniformly given us better results than any other germicide we have employed, and the method of its application is simpler and the dressings are more economical than with any of the other chlorin agents.

3. The best results with dichloramin-T can be obtained only when actual chemical contact of the germicide with the infecting organisms is maintained. To maintain such contact in superficial surgical infections is a simple matter and in the first few months of the work a satisfactory technic for this class of wounds was developed. In deep and inaccessible infections, the problem is more difficult and the greater part of these fifteen months has been devoted to this aspect.

4. Our confidence in the germicidal value of dichloramin-T has so developed that when it does not control a surgical infection we believe that the chemical contact has not been maintained, the mass of the germicide employed has not been sufficient, or adequate surgical treatment has not been given.

5. The striking detoxicating effect of the chlorin group of germicides, which has become common knowledge through the general use of Dakin's hypochlorite solution, is just as satisfactorily exhibited with dichloramin-T.

ABSTRACT OF DISCUSSION

DR. EDWARD H. OCHSNER, Chicago: The treatment of wounds and infections has interested surgeons from time immemorial. In the pre-Listerian days there were two great schools in the treatment of surgical infections—one of the

schools favored ointments and the other water dressings. After Lister did his work, phenol became the great fad of the day. It was used in lotions and in nebulae, until not only the patients, but the surgeons developed smoky urine and chronic nephritis. It was discarded, often even in those conditions where it would have been of great benefit. Then came the bichlorid fad. This went through the same round of overexploitation and discard. Chronologically speaking, hydrogen peroxid came next and had the same experience, then came Wright's vaccine; last year we had eusol; today we have dichloramin-T. Every one of the methods I have mentioned is valuable. Each is valuable in certain conditions, but not one of them, not even dichloramin-T, is valuable in all forms of infection. Bacteriologists have found that in order to grow at its best, every micro-organism must have a very definite nutritive medium. They have discovered that by adding a little of this or that substance, a medium which is ideal for a certain micro-organism will become totally unsuitable for it. The clinician of large experience has made exactly the same observation in the dressing room. He has discovered a specific for nearly every pathogenic organism and the thing to do now is not to try to cure all infections by one remedy, but to use the specifics that are already discovered and make every effort to find specifics in the cases where this has not already been accomplished. This will put the treatment of septic infections on a secure scientific basis.

DR. W. ESTELL LEE, Philadelphia: I want to thank Dr. Ochsner for his timely warning against too much dependence being placed on antiseptics in the prevention and control of infection. He has clearly emphasized the position we have taken in the problem of surgical infection. It should not be forgotten that infection and suppuration in human tissues depend on many factors other than that of the bacterial content. Military surgeons are placing less faith in antiseptics and are realizing the absolute necessity for ideal surgery. The end results following adequate surgical procedures in the treatment of infections and infected wounds are always better when an antiseptic is used in the proper way, but no antiseptic can be substituted for the necessary surgical procedures. The history of the treatment of surgical infection which Dr. Ochsner has outlined makes fascinating reading. The biography of Sir Lord Lister, by his nephew Godlee, covers this in an exhaustive manner and is well worth reading. The search for specific germicides for specific organisms of suppuration has engaged many workers during these years, but with the exceptions of quinin and arsphenamin there have been no satisfactory results. And these specifics are not for bacteria.

Hypochlorite, hyclorite and similar chlorin solutions contain active chlorin, which, when it comes in contact with the protein of suppurating wounds, rapidly combines with it and forms substances known as chloramins. These chloramins are probably the real germicidal agents acting when chlorin solutions are used. Because of the irritating properties of active chlorin when uncombined with protein, as on the skin surrounding wounds, such solutions can only be used in very weak dilutions. The chloramins are practically nonirritating. It is possible to make the chloramins synthetically and thus use germicidal masses forty times that generated in wounds when the usual weak solutions of active chlorin are introduced into wounds to make chloramins.

Book on Disease Prevention and Care of Sick.—The United States Public Health Service has just issued a book on the "Prevention of Disease and Care of the Sick" with a supplement on "First Aid to the Injured" which, according to the preface, is "for the use of the layman in order that he may know what measures he should take to protect himself from disease and what he should do in case of illness." This book discusses prevention and treatment of disease, emergency measures in accidental injuries, the sanitation of buildings, camps and vessels, transmission of disease by insects, rats, vermin, and the destruction of these and other harmful forms of animal life, personal hygiene and diet. The book is intended chiefly for the use of laymen when medical attention is not obtainable.

GOITER IN PREGNANCY*

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Exophthalmic goiter in pregnancy is rare, owing to the restraining influence the disease exerts on conception. Halliday-Croom[1] reports only one case in 15,000 dispensary patients, while in his private practice he found twelve cases, causing him to believe that this complication is more prevalent among the upper classes. Bonnaire[2] found two cases in 30,000 dispensary patients. Seitz[3] in 1913 was able to collect 112 cases from his own material, literature and circular letters. Additional cases have been reported by Gellhorn,[4] Ward,[5] Markoe,[6] Crotti,[7] Davis,[8] Porter,[9] Stowe[10] and others.

I want to report seven cases of toxic goiter with exophthalmos and nine cases of toxic nonexophthalmic goiter occurring during pregnancy, seen during the past five years.

I believe that occasionally patients with goiter of brief duration ascribe their increase in symptoms at pregnancy to the pregnancy itself, while in reality the symptoms are due to a beginning hyperthyroidism. There is no doubt that some of these patients are treated for neurasthenia, hysteria, palpitation of the heart, and gastro-intestinal and nervous disorders. Many physicians do not regard goiter seriously unless it is accompanied by marked exophthalmos. At any rate, we should be more on the alert for this condition and many questionable cases should receive more painstaking diagnosis and more continued observation. One of the best means we have of furthering the study of this obscure subject is by reporting and discussing the few cases we see. I believe the subject may be most conveniently considered under the following headings: 1. Experimental Studies, 2. Clinical Observations, 3. Treatment, 4. Case Reports.

EXPERIMENTAL STUDIES

While it is true that animals lack the characteristic symptoms associated with thyroid hyperplasia in the human, the similarity of the structure of the gland makes it possible to carry out certain studies which obviously cannot be done on man.

Interest in this subject was stimulated twenty-two years ago by Halsted,[11] who reported that partially thyroidectomized dogs showed evidence of athyreosis as time of parturition approached, but the condition disappeared soon after delivery. The pups born of these dogs showed thyroids many times the normal size. Carlson[12] found, from an extensive study of newly born pups of mothers with colloid goiter, that the pups' thyroids were identical with those of pups born of mothers with normal thyroids; on the other hand, pups from mothers with active thyroid hyperplasia had thyroids larger than the normal, in direct proportion to the degree of hyperplasia in the mother.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

1. Halliday-Croom, quoted by Crotti: Thyroid and Thymus, 1918.
2. Bonnaire, quoted by Crotti: Thyroid and Thymus, 1918.
3. Seitz: Deutsch. Gesellsch. für Gynäk., Halle, May, 1913.
4. Gellhorn, G.: Am. Jour. Obstetrics, 1913, **68**, 1132.
5. Ward, G. G., Jr.: Surg., Gynec. and Obst., 1910, **9**, 617.
6. Markoe, J. W.: Bull. Lying-In Hosp., June, 1912-1913, **9**, 96.
7. Crotti, A.: Thyroid and Thymus, 1918.
8. Davis, E. P.: Bull. Lying-in Hosp., 1912-1913, **8**, 176.
9. Porter, M. F.: Am. Jour. Obst., 1911, **14**, 781.
10. Stowe, H. M.: Am. Jour. Obst., 1909, **60**, 223.
11. Halsted, W. S.: Bull. Johns Hopkins Hosp., 1896, **1**, 399.
12. Carlson, A. J.: Am. Jour. Physiol., 1914, **33**, 95.

The same was true of kittens. Carlson remarks that while the above observations were made in a locality where goiter is endemic among dogs, the proportion being perhaps 90 per cent., no mother with a normal thyroid gave birth to a goitrous pup.

Hoskins[13] fed thyroid to pregnant guinea-pigs and found the newborn had abnormally small thyroids. Beibtreu[14] also fed thyroid to pregnant guinea-pigs and found that it caused frequent abortion, death and absorption of the fetus.

Some years ago the sheep in northern Wisconsin and Michigan developed goiter and the lambs became cretins. On substituting sea salt with a high iodin content for the local salt, the goiter disappeared and healthy lambs were again raised. Smith[15] made a study of fetal athyreosis, which is prevalent among pigs in certain sections of the Northwest, causing them to be born hairless and dead or in a dying condition, and concluded that an iodin deficiency existed during the latter part of gestation, he apparently proved his point by feeding the mothers iodin during pregnancy and producing healthy pigs.

Tatum and Mills,[16] working with rabbits, guinea-pigs, cats and pigs, found that if the animals were kept in a cold box for one week or longer, their thyroids showed lessened colloid and taller epithelial cells, that is, increased activity. On the other hand, animals kept for the same length of time in a warm room at 30 to 32 C. showed increased colloid and flattened epithelium, indicating decreased activity. Further studies of the seasonal variation of the thyroid of pregnant and nonpregnant wild animals is now in progress.

Marine[17] has shown that the iodin content is highest in normal and colloid thyroids, and lowest in marked hyperplastic or exophthalmic thyroids. The adult thyroid contains more iodin than any other organ in the body. In the fetal thyroid, iodin is present in very small amounts and may rarely be absent. In pregnancy the iodin content of the thyroid diminishes as the time of parturition approaches unless the mother is fed iodin, which increases it in both the maternal and fetal thyroid. One of the most valuable discoveries of recent years is that of Kendall,[18] who has isolated from the thyroid an active hormone, thyroxin, which contains the active principle of the thyroid gland.

CLINICAL OBSERVATIONS

It is the opinion that physiologic enlargement of the thyroid gland during pregnancy is greater and more frequently observed in patients living in goitrous localities than in those patients living in sections where goiter is less prevalent. However, from a very limited number of cases, I believe it occurs more frequently in nongoitrous communities than is generally supposed.

Doege[19] observed a noticeable enlargement of the thyroid gland at pregnancy in 8 per cent. of the patients living in the Great Lakes region. In 60 per cent. of these patients the symptoms were aggravated by pregnancy. Von Graff,[20] also working in a goiter district, observed goiter beginning in pregnancy in 9 per cent. of 654 cases. Markoe and Wing examined 1,586 pregnant women in a nongoitrous locality and found that in 6 per cent. the beginning of goiter could be traced to pregnancy. They observed that goiter occurred in a majority in the first pregnancy, and that the symptoms usually diminished after confinement, and were less severe with succeeding pregnancies. When goiter occurred among multiparas, it appeared on an average at the fifth pregnancy.

Ward shares the view of Lang,[21] who suggested that if the thyroid does not enlarge during pregnancy the patient is likely to develop nephritis and albuminuria. Von Graff found that eclamptic patients had less thyroid enlargement than normal patients.

The subjective thyroid disturbances are usually most pronounced during the first two or four months of pregnancy. After the fifth month, subjective improvement usually occurs or the symptoms increase and hyperplasia develops with or without exophthalmos. The patient with increasing symptoms of hyperthyroidism is liable to have hemorrhages and abort.

TREATMENT

If we bear in mind the pathologic changes that accompany hyperplastic or exophthalmic goiter, it is obvious that treatment which stops short of destroying a portion of the enlarged and hyperactive gland, will at times fail to afford relief from the acute symptoms, and will also fail to prevent recurrence when the hyperplastic although quiescent goiter is subjected to any unusual strain such as pregnancy, parturition, grief, worry, infection, etc. This is well shown in the accompanying case reports.

It is generally agreed that any operation on the thyroid during pregnancy is attended by more danger than when performed on the nonpregnant patient, and for this reason a majority of surgeons are opposed to thyroid operations during pregnancy unless the goiter causes serious difficulty in breathing.

I have secured good results with quinin and urea injections made directly into the gland, to produce localized aseptic necrosis of a portion of the hyperplastic thyroid. The procedure is without the danger to mother and child that attends partial thyroidectomy. Obstetricians, surgeons and internists agree that any procedure for the treatment of goiter must be based on a period of rest, with medical, dietetic and hygienic measures suited to the needs of the individual patient.

Organotherapy has an established place in the treatment of goiter in pregnancy associated with neurasthenia or deficient thyroid function. When a woman shows thyroid insufficiency or kidney disturbance or has a history of having had these conditions, with the beginning of a pregnancy she should receive thyroid continuously throughout gestation in doses suited to her requirements. It should not be stopped before parturition even though symptomatic improvement occurs. Culbertson[22] believes that the relationship between the ovary and thyroid is complementary. If there is evidence of ovarian deficiency, corpora lutea or the whole gland extract should be given.

In the presence of hyperthyroidism, if the symptoms steadily become worse in spite of conservative measures, it may be necessary to empty the uterus to afford relief to the mother. The danger of eclampsia occurring is increased at this time, and it may appear without the presence of albuminuria or casts. The ammonia

13. Hoskins, R. G.: Am. Jour. Physiol., 1910, **26**, 426.
14. Beibtreu Deutsch. med. Wchnschr., 1910, **33**, 15.
15. Smith, G. E.: Jour. Biol. Chem., 1917, **29**, 215.
16. Tatum, A. L., and Mills, C. A.: Personal communication to the author.
17. Marine, D.: Surg., Gynec. and Obst., 1917, **25**, 272.
18. Kendall, E. C.: Personal communication to the author.
19. Doege, K. W.: Wisconsin Med. Jour., 1915-1916, **14**, 49.
20. Von Graff: Deutsch. Gesellsch. f. Gynäk., May, 1913.
21. Lang: Jahresb. f. Gynäk. und Geburtsh., 1898-1899.
22. Culbertson, C.: Surg., Gynec. and Obst., 1916, **23**, 667.

nitrogen is the best index of impending eclampsia, and while a normal amount is about 5 per cent., when it reaches 15 per cent. or more, the uterus should be emptied without delay unless the ammonia nitrogen can be reduced. If the ammonia nitrogen test is not available, the blood pressure should be watched closely throughout pregnancy.

Cesarean section is the treatment of choice. The high abdominal incision of Markoe and Davis is very satisfactory. Gellhorn advocates vaginal section under spinal anesthesia. Webster[23] uses local anesthesia for abdominal section.

Obstetricians generally agree that the induction of labor in these cases is seldom indicated because it is too slow and uncertain and more dangerous than cesarean section.

REPORT OF CASES

Time permits only brief mention of the case reports. I believe the following to be of more than usual interest:

CASE 1.—Mrs. E. B., aged 27, during her first pregnancy in 1909, developed exophthalmic goiter not relieved by parturition. A year later, the right lobe of the thyroid was removed. Because of her poor general condition, the surgeon did not operate on the enlarged left lobe. Relief lasted for six months, when all the symptoms gradually recurred. Another surgeon believed her symptoms due to the appendix, and performed appendectomy without relief. She again became pregnant in 1911, and gave birth to a poorly developed, nervous child. Her symptoms increased and she was treated from time to time for hysteria, neurasthenia and epilepsy. I saw her first in March, 1914, when she presented well marked symptoms of exophthalmic goiter. In addition to the usual medical treatment, she received a number of injections of quinin and urea into the enlarged left lobe. Her improvement was slow but steady, and within a year her symptoms and goiter had disappeared. There was no recurrence, May, 1918.

CASE 2.—Mrs. W. B., aged 29, noticed a small goiter with symptoms during her first pregnancy in 1913. Her condition did not improve after parturition. She became pregnant again in July, 1916, and because of increasing symptoms, consulted me in October, when she presented well defined symptoms of exophthalmic goiter, with increasing pressure symptoms from the growing tumor. The usual medical measures were advised and quinin and urea injections were given into the thyroid. Symptomatic relief was prompt, and the goiter disappeared before parturition, when she gave birth to a healthy, robust child. In May, 1918, this patient writes that she is in good health, with no evidence of her former symptoms or tumor.

CASE 3.—Mrs. W. K., aged 35, had a normal first pregnancy in 1909. During her second pregnancy, in 1911, a small goiter was noticed with increasing symptoms as parturition approached. The symptoms were slightly lessened by delivery, and were aggravated by a third pregnancy in 1914, and a fourth in 1915. I first saw this patient in January, 1917, when she presented advanced exophthalmic goiter with marked dilatation of the heart, and weighed 91 pounds. Besides the usual medical treatment, she was given injections of quinin and urea into the thyroid gland. After the second month the goiter diminished, in three months the general symptoms began to improve, the exophthalmos lessened and she had gained 9 pounds in weight. Six months later the goiter had disappeared, the general health was good and she weighed 124 pounds. In May, 1918, she wrote that she did most of her housework the previous year, that the exophthalmos had disappeared, and that she weighed 130 pounds.

CASE 4.—Mrs. C., aged 35, had one healthy child 2 years old. When I first saw this patient in January, 1915, she was four months pregnant and gave a history of exophthalmic goiter beginning two months before. Prompt improvement followed quinin and urea injections in conjunction with the regular medical treatment. She went to term and had a normal delivery, with no return of the goiter or symptoms up to May, 1918.

23. Webster, J. C.: Surg., Gynec. and Obst., 1913, 17, 294.

CONCLUSIONS

1. Preexisting goiter, either simple or toxic in type, is usually aggravated by pregnancy.
2. It is believed that the symptoms and growth of hyperplastic goiter in pregnancy can usually be controlled by quinin and urea injections into a portion of the thyroid gland.
3. Should symptoms progress in spite of conservative measures, a rapid delivery is indicated. If the child is viable, cesarean section should be done.
4. Operation on the thyroid is indicated to relieve pressure symptoms of solid goiters. Cystic goiter may be promptly relieved by quinin and urea injections.
5. Pregnant women with subthyroid conditions should receive iodids or thyroid throughout gestation.

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ABSTRACT OF DISCUSSION

DR. JAMES W. MARKOE, New York: In reviewing my records I find that in 1,586 cases of pregnancy there were 132 goiters, only eight of which were toxic or hyperthyroid diseases. In twenty-eight years 100,000 obstetric cases have been under my observation, and there was only one case of operative interference for thyroid complication. This was a rather interesting case because it was the woman's ninth child and my brother had previously removed the right lobe of the thyroid. When the woman came into the hospital she was choking to death from the pressure on her trachea. She had no true hyperthyroidism. I therefore removed part of the left lobe, relieving the symptoms, and she made a good recovery. I am not so sure that pregnancy increases the symptoms of simple thyroid. That, I think, depends largely on the hygienic surroundings and the treatment given these patients. My plan has been to put them immediately in the open air, feed them well, endeavoring to keep them in the best of health. Notwithstanding, all the cases we have had, I do not think the number sufficient to come to a definite opinion concerning treatment.

The use of quinin and urea is similar to the use of boiling water employed by Charles Mayo and others and to the use of phenol and boiling water employed by Ochsner. The result of these injections is a marked edema in the tissues, sometimes with fatal issue. I think this result has occurred in one or two cases. Although Dr. Watson has reported some splendid results, I think we must sound a note of warning not to inject any of these substances at random. We may have complication of acute edema with sudden death. I have never seen a case of hyperthyroidism calling for interference during pregnancy. While cesarean section might be done, it seems to me that unless a case has not been observed until entering the hospital, general hygienic treatment and general treatment of the goiter might possibly so improve the patient's condition that operative measures could be prevented. In a case in very serious condition, even the shock of the cesarean section, and there is a shock in cesarean section, might cause death, just as might the disease. I would urge that more careful observation be given cases of pregnancy and better records kept so that more valuable statistics may be secured. There must be thousands and thousands of cases of goiter in pregnancy in which careful observation would add greatly to our knowledge and to the benefit of the patient.

DR. C. H. MAYO, Rochester, Minn.: This is an interesting subject to all of us who deal with pregnant women, and to those of us who deal with the thyroid from the clinical standpoint. If iodin is supplied to the thyroid the gland becomes reduced since it does not have to do so much work. It seems to me that if pregnant women who have goiters could get iodin the thyroid would convert it into the thyroidal iodin that is needed in the body. I have seen patients with exophthalmic

goiter run through three pregnancies, and they were very much better during the pregnancy period than they had been preceding it. Some such patients are worse during the pregnancy period. I do not care to operate on the pregnant woman with goiter. If possible, she should be tided through pregnancy. In many instances, after the birth of a child, the goiter will disappear almost wholly. Some time ago I watched the work of Dr. Crile, who injected into the tissues about the operative field quinin and urea to block the innervation. It struck me that there was not so much in the blocking, but that if the infiltration did block, why should we not inject the gland itself and create the edema within its own capsule, as in cloudy swelling of the kidney, that would check off the secretions and the ability to take the blood supply. I began making these injections about three years ago, and have reported some cases. The action is about the same as in the injection of boiling water, though much less severe. I have had three patients with exophthalmic goiter die from the injection of hot water. They were treated in their beds to prevent shock; the water was probably not hot enough to coagulate albumen, and possibly more easily enabled the gland to throw off the hormones of secretion. I used the quinin and the urea to make a block within the substance of the gland itself, and not so much as a destroying agent. Many of these cases are necessary for a determination of the best treatment. I am inclined to believe that the tendency is toward improvement, and that in only the bad cases should any form of surgery be done during pregnancy.

DR. LEIGH F. WATSON, Chicago: No deaths or alarming symptoms have followed the injections. There are several reasons why massive injections should never be given. I inject only 5 or 10 minims of the solution at a time, repeating the treatments at one to three day intervals.

THE PREVENTION OF GAS PAINS

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During the last decades, rapid progress has been made in all fields of modern medicine. Many a tradition based on the experiences of the fathers had to fall before the logic and research of modern investigators. Nevertheless, there is a tendency to put tradition above new ideas because the valuable experiences of the earlier observers have apparently proved efficacious for one or another period of medicine. Furthermore, the medical student, who has received in his early training didactic teaching which offers many medical traditions in the form of strict rules, becomes so deeply impressed that it seems to him that medical sacrilege is committed if the teachings of his school days are attacked. The modern history of medicine tells of many hard struggles in which medical traditions were attacked for long periods before they were finally abandoned.

One of the best examples of this is the old custom of purging and dieting, in other words, "carefully preparing" patients before operations. The underlying idea of this habit developed in the dark ages of medicine. Alvarez,[1] in a review of the history pertaining to this subject, traces the development of the custom of purging back to the days when humoral pathology dominated the minds of all medical men. Humoral pathology fell, but the custom of purging before operations remained and became an iron-clad rule in surgery.

1. Alvarez, W. C.: Surg. Gynec. and Obst., to be published.

Voices of protest have been raised from time to time, but apparently without result. No attempt has been made to collect all of these protests because many are buried in articles pertaining to other subjects and consequently are hard to uncover. Among the more recent observers on the clinical side of this question, Harris[2] in 1905 warned against purging in acute abdominal infection, but neglected to speak about purging in general. Walker,[3] in 1906, reported that he had not used purgation in his preoperative preparation for more than two years, and that he was convinced that his patients suffered less with tympany, and recovered more quickly. Moore[4] reminds us that ordinarily we would rather not operate on a person weakened by diarrhea; we would rather build him up first. He also reports favorable results in the disuse of preoperative catharsis. Quain,[5] in 1912, commented on the less stormy convalescence of patients who had not been purged. Those of his patients who had been carefully prepared developed the worst cases of meteorism in spite of most careful handling of the viscera. He had been using the new technic for one year and was delighted with his results. In 1914, Crile[6] warned against starving and purging before operation, because it interfered with the normal tone of the intestine. About this time Bloodgood[7] stated that since he had stopped giving cathartics within forty-eight hours before the operation, he had had less trouble with intestinal paresis and distention.

EVIDENCE FROM EMERGENCY OPERATIONS

Further proof of the harmfulness and needlessness of "intestinal preparation" can be obtained from the experience of surgeons with emergency operations. Nobody will deny that the woman with an acute appendicitis, a tubal pregnancy or a cesarean section will usually recover from the operation with little abdominal distress besides that occasioned by the wounds. On the other hand, the "carefully prepared" patient who has been operated on for chronic appendicitis or who undergoes an exploratory laparotomy will often be troubled with most distressing gas pains and distention. In spite of all these observations, preoperative purging is still being practiced by many who simply follow tradition. The old argument that a nonprepared bowel does not pack off well in a laparotomy is, I think, faulty, if we remember with what ease the bowel can be packed off in emergency cases. I still recall those distressing hours during my early internship when we attempted to keep the distended and well purged bowel from rising into the incision. Those who have had occasion to do experimental work in animals (never purged) will also remember that the bowel never tends to escape from their abdomens. Some surgeons purge so that the bowels may be empty in case peritonitis should follow. Fortunately, postoperative peritonitis is rare, and if purging interferes with gas absorption, as shown by experimental evidence, such a bowel, deficient in its power of gas absorption, will present an increased danger, since peritonitis of itself tends to produce tympany.

2. Harris, M. L.: Dangers from Indiscriminate Use of Cathartics in Acute Intestinal Conditions, THE JOURNAL A. M. A., Feb. 25, 1905, p. 622.
3. Walker, Edwin: Am. Jour. Obst., 1906, 54, 722.
4. Moore, J. E.: Surg., Gynec. and Obst., 1908, 6, 281.
5. Quain, E. P.: Some Observations on Catharsis, THE JOURNAL A. M. A., July 6, 1912, p. 27.
6. Crile, G. W., cited in Conservation of Energy, Therapeutics, THE JOURNAL A. M. A., Jan. 10, 1914, p. 129.
7. Bloodgood, J. C.: Prog. Med., December, 1913, p. 216.

As long as only clinical objections had been raised, the idea of abandoning purging before operation did not find ready ears among the surgeons. It is true that of late there has been a decided tendency to moderate the purging. If we may judge, however, from recent books and articles on surgery, the custom of purging seems to have as strong a footing as it ever had in didactic teaching. Further proof had to come from the laboratory to support and confirm our clinical observations.

RESULTS OF EXPERIMENTS ON ANIMALS

It has now been shown by experiments on animals that preoperative catharsis is harmful rather than beneficial. Alvarez and Taylor[8] purged a number of rabbits and then compared the behavior of excised segments from these animals with that of segments from normal animals. They found that purged animals are apathetic and sick-looking, that the excised segments of small intestine of these animals showed a rapid fatigue, and that they were less sensitive to drugs applied locally. They found further that the majority of purged animals showed increased intestinal gas and often a congestion of the mesenteric circulation. Most important of all, there was an upset in the gradient of muscular forces from duodenum to ileum—that gradient which Alvarez[9] has shown to be so essential to the even progress of food and gas toward the anus.

This work is in agreement with that of other laboratory workers who have studied the problems of flatulence. Schmidt[10] pointed out in 1909 that congestion of the abdominal circulation leads to the collection of gas in the intestine. The same was observed by Kan Kato,[11] who proved that clamping of the portal vein prevents the absorption of carbon dioxid from the intestine. This bears out the theory that disturbances in the portal circulation, such as are caused by cirrhosis or cardiac disease, will interfere with the gas absorption. Schierbeck[12] in 1893 and Woodyatt and Graham[13] in 1912 carried this problem still further and found that the blood not only fails to carry the gas away but may even exhale some into the bowel. That gas absorption takes place in man is proved by rectal ether anesthesia, introduced by Pirogoff[14] in 1847 and used in this country first by Cunningham and Lahey[15] in 1905. Kader[16] tied off loops of dog's intestine and returned them to the abdomen for several hours. He found it made very little difference whether or not he washed these loops out with salt solution or filled them with intestinal contents from adjoining loops. Very little gas was found in either case. When, however, the mesenteric circulation was interfered with, especially on its venous side, an enormous accumulation of gas occurred. The congestion of the bowel after purgation has been observed also in men at the time of operation.

8. Alvarez, W. C., and Taylor, F. B.: Changes in Rhythmicity, Irritability and Tone in the Purged Intestine, Jour. Pharmacol. and Exper. Therap., 1917, **10**, 365.
9. Alvarez, W. C.: The Motor Functions of the Intestine from a New Point of View, THE JOURNAL A. M. A., July 31, 1915, p. 388.
10. Schmidt, Adolf: Klinik der Darmkrankheiten, 1913, pp. 219, 440.
11. Kato, Kan: Int. Beitr. z. Path. u. Therap. d. Ernährgst, 1910, **1**, 315.
12. Schierbeck, N. P.: Skand. Arch. f. Physiol., 1893-1894, **5**, 1.
13. Woodyatt, H. J., and Graham, E. A.: Tr. Chicago Path. Soc., 1912, **8**, 354.
14. Pirogoff, N. I.: Recherches practiques et physiologiques sur l'etherization, St. Petersburg, 1847.
15. Cunningham, J. H., and Lahey, F. H.: Boston Med. and Surg. Jour., 1905, **152**, 450.
16. Kader, B.: Deutsch. Ztschr. f. Chir., 1891, **33**, 57.

COMPARISON OF PURGED AND NONPURGED PATIENTS

The essential thing now is to get careful reports on the preoperative courses of a large unselected series of purged and nonpurged patients.

The first stimulus in making personal observations in this field was received in 1915 in the Women's Clinic of the University of California Medical School. I was able, then, to compare a number of unselected cases, in which some of the patients had been carefully prepared with castor oil and enemas while the others had received a cleansing enema shortly before the operation. The differences in the postoperative courses were striking. The patients who had no preparation except the enema were usually comfortable unless their operations had been very severe, while the others were often troubled with more or less severe tympany and distress, which taxed all the therapeutic ingenuity of the resident staff. At that time, it was also the custom to give the rectal drip to every patient, usually black coffee and physiologic sodium chlorid solution, half and half. It did not occur to any of us that the rectal drip might contribute very much to the discomfort of the patients, until one day it was noticed that some patients vomited a dark brown fluid which later proved to be coffee. On observing carefully, I gained the impression that the unpurged patients were not only freer from gas pains but would not develop sufficient reverse peristalsis to vomit the enema. During the next two years, the rectal drip was practically abandoned, but castor oil was still given to about two thirds of the patients, with the results previously recorded.

Since joining the staff of the Women's Clinic of the Leland Stanford Junior University, I have carefully recorded the severity of the pains experienced by the patients after a hundred major operations. In most of these cases, the peritoneum was opened and a great variety of pelvic work done. The first fifty were prepared in the old way, that is, 1 ounce of castor oil was given the night before the operation and a liquid diet was prescribed with no breakfast and an enema of soap suds early in the morning at about 6 o'clock. The next fifty patients received no purgation. The results are shown in the accompanying table.

INCIDENCE OF PAINS IN ONE HUNDRED MAJOR OPERATIONS

	With Purging		Without Purging	
	Number of Cases	Per Cent.	Number of Cases	Per Cent.
Severe gas pains	11	22	1	2
Mild gas pains	15	30	2	4
"Cramps"	11	22	14	28
No gas pains	13	26	33	66
Totals	50	100	50	100

The second fifty received an enema the night before the operation and early in the morning. General diet was given the night before the operation, if the operation was to be in the morning, and also a light breakfast if the patient was to be operated on in the afternoon.

It should be noted that the types of operation, as well as the operators, were about the same in the first fifty as in the second. In fact, there were a good many more operations in the second fifty in which the viscera had to be handled more roughly on account of adhesions. There were also a greater number of complete hysterectomies with vaginal drainage in the second fifty. Consequently, even if the number of cases observed is small, the results seem very definite.

It is sometimes hard to diagnose mild gas pains, and quite often only the suggestion of the term will make a patient complain. Nurses, also, will call anything gas pains that is associated with pains in the abdomen after operation. As long as there is no sign of even mild tympany, I have not felt myself justified to speak of gas pains but rather term them "cramps." These cramps are said to be relieved often by a rectal tube and therefore "must be gas pains," but I have found that they are also relieved by anything that will bring back a smooth downward peristalsis, as for instance by a glycerin suppository or an enema which does not bring flatus, and above all, by food. The empty bowel seems to contract violently in certain segments; and since the stimulus for a rhythmic downward motion, that is, food, is missing, peristalsis seems to churn back and forth in certain segments, producing "cramp-like" pains, which some of our patients likened to the sensation following the administration of compound cathartic pills. Estimating the number of patients with "cramps," I have, perhaps, been very liberal, as I may have called "cramps" what in reality was pain in the operative field, which by coincidence disappeared after the patient had partaken of solid food. Handling of the viscera undoubtedly predisposes to gas pains. In the second half of the cases observed all the patients that had gas pains had dense adhesions, which had to be broken up. They also had vaginal drainage, and I recall that as soon as the drain was removed, gas pains ceased at once in a few of the patients.

As far as the bowel at operation is concerned, none of us had any difficulty in packing off. I myself believe that the nonpurged bowel always appears normally pale and well collapsed, while the purged bowel has a slight distention and a dusky hue. I would emphasize particularly that the large bowel was sufficiently cleansed by the enema alone. No difficulty was encountered on that score. At the present time, preoperative purging has been stricken from the ward rules. Our patients seem to be better off, and much work and worry in treating gas pains has been eliminated.

GAS PAINS IN HERNIA

While the foregoing observations were being made, we found that the hernia patiens were often bothered with severe gas pains. At my suggestion, Dr. John F. Cowan stopped the giving of castor oil to these patients before operation. A few were still given a mild laxative forty-eight hours before operation. With the permission of the members of the general surgical staff, I observed twenty-six laparotomies, including fifteen herniotomies and six appendectomies. Here again the results were very promising. Among the hernias there was not one case of severe gas pains. There was only one case of mild distention and practically no cramps, while in all the appendectomies the patients had been free from any abdominal distress. I have not counted in the patients who received the mild laxative, as they would spoil the argument. Dr. Emmet Rixford told me lately that he has made quite similar observations in his long practice, and that he also believes purging is not beneficial, and as far as technic is concerned, it can be dispensed with. He still feels that it is good practice to clear the bowel four or five days before operation with a mild laxative in order to remove any possible impacted fecal material.

It is not within the scope of this paper to discuss the treatment of gas pains. It may be said, though, that all treatment should tend to restore normal peristalsis. The best stimulus for this is food, and the earlier it is given, the better for the comfort of the patient. In many patients, especially those that have not been purged, the bowel will perform its function normally as soon as solid material finds its way into the bowel, and quite often even mild laxatives may be dispensed with.

The watchword of modern medicine is "prophylaxis." We have applied it to the operating room by developing asepsis to its highest degree. Do not let us stop there, but consider prophylaxis also for the postoperative condition of our patients. Let us eliminate untimely purging, one of the biggest factors in producing gas pains.

SUMMARY

1. Clinical and experimental observations strongly suggest that preoperative purging is a strong factor in the producing of gas pains.

2. At operation the strongly purged bowel is more difficult to handle than the unpurged bowel on account of congestion and distention.

3. An enema will clear the lower bowel sufficiently for any operative work.

4. Patients who have not been purged are comparatively free from gas pains.

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MOISTURE IN THE AIR SPACES OF THE LUNGS AND OXYGEN THERAPY *

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While on duty at a casualty clearing station in Flanders in the summer of 1917, I observed several respiratory phenomena associated with foam in the air passages which conferred an entirely new significance on the presence of moisture in the bronchial tree.

The patients who exhibited these symptoms were men who inhaled phosgen and chlorin. These patients had, essentially, a large amount of plasma poured into the air spaces of the lungs, which was not secondary to incompetence of the left ventricle. It was a severe primary edema of the lungs unassociated with myocardial incompetence.

One of the things that impressed me was the disproportion between cyanosis and air hunger. The evidence of cyanosis was very much more pronounced than was air hunger in most of the patients.

Another very striking experience was the manner in which patients were relieved of cyanosis by the inhalation of oxygen, and the fact that the relief of cyanosis was not attended with any change in the volume or rate of respiration; and subjectively the patients were not made more comfortable from the inhalation of oxygen.

If a gassed patient, whose bronchial tract is filled with foam and who has cyanosis, breathes pure oxygen, he is relieved of cyanosis, but the relief does not come promptly. It is unlike relief from cyanosis which has been caused by laryngeal obstruction. When a

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patient suffering from cyanosis due to laryngeal obstruction has the obstruction relieved, cyanosis disappears within a few seconds and the patient is instantly made comfortable. The gassed patient was not relieved of cyanosis until after he breathed pure oxygen for from three to five minutes. The patients could not tell when they were breathing oxygen and when they were breathing atmospheric air. In fact they preferred to be relieved of having a mask over their faces, although this method gave them the greatest relief from anoxemia. Evidently the psychic effect of the obstructing mask contributed to their discomfort and they begged to be relieved of it. They preferred to have the stream of oxygen conducted into their respiratory tract by way of a soft rubber tube inserted in the nostril, although by this method I did not see a single case in which cyanosis was diminished. It is quite apparent that cyanosis and air hunger did not develop apace with each other and that anoxemia could be relieved without giving any relief for air hunger. The problem that requires an explanation is how anoxemia and air hunger are largely dissociated when the patient is breathing atmospheric air, and why only cyanosis is favorably affected when the patient breathes pure oxygen.

It has been suggested the dissociation is due to the film of moisture which intervenes between the ventilating air and respiratory membrane. Carbon dioxid is twenty-five times as soluble in water as oxygen, and consequently the escape of carbon dioxid from the blood is much better fulfilled than the absorption of oxygen. Carbon dioxid can escape from the blood, but oxygen is absorbed in much smaller amounts. This explanation obviously will not satisfy the clinical experience. If, according to the predicate on which this theory is advanced, the patient is suffering from anoxemia and has an adequate escape from carbon dioxid acidosis, then the abrogation of anoxemia should give the patient perfect comfort. There is another point about this theory which is not consistent with the facts. Plasma in the bronchial tree and respiratory units does not lie as a film of moisture but occupies the air space as foam. At the end of an expiration, the entire air space of the lung from the nares to the respiratory membrane is occupied by foam. The total volume of this foam must amount to at least 1,200 c.c. and during inspiration all the contained foam is aspirated into the air spaces and will be unequally distributed throughout the respiratory units. Some units will be filled with foam, and no doubt many units will contain no foam whatever. This foam is alveolar air foam and when it has acquired the same partial pressure of carbon dioxid as the affluent blood to the lung, all escape of carbon dioxid from the blood into the unit occupied by foam will be impossible. When a respiratory unit is full of alveolar air foam, the only area for escape of carbon dioxid will be the cross section of bronchi which supply any portion of the lungs thus affected.

The fact that the circulating blood in the lung of a normal person at rest is able to contribute 20 c.c. of carbon dioxid to the ventilating air during each respiratory cycle is due to the large area of the respiratory membrane.

The following experiment illustrates the significance of the area of the cross section of a communicating path between two fields of different partial pressures of a gas.

Two 3-liter bottles were furnished with a connecting tube which was 20 cm. long and had a diameter of 1.5 cm. One bottle contained 19.5 per cent. of carbon dioxid and the other bottle contained 0.1 per cent. carbon dioxid. Both were at barometric pressure. The communication between the two bottles was established and specimens of air were taken from each bottle by employing a device which enabled us to remove specimens of air from each bottle without disturbing the barometric pressure.

The results summarized in Table 1 give the comparative concentration of carbon dioxid in each bottle at a given time.

TABLE 1.—COMPARISON OF AIR SPECIMENS IN CARBON DIOXID CONTENT

Time	Percentage Carbon Dioxid in A	Percentage Carbon Dioxid in B
11.35	0.1	19.5
11.45	1.25	18.2
11.55	3.25	17.0
12.55	3.75	15.3
1.25	4.85	13.9
2.40	6.20	11.4

The same experiment was then repeated by using a connecting passage of the same length as in the first experiment but with a lumen of 5 cm. The results obtained are set forth in Table 2.

TABLE 2.—COMPARISON OF SAME SPECIMENS AS IN TABLE 1, WITH LUMEN OF 5 CM.

Time	Percentage Carbon Dioxid in A	Percentage Carbon Dioxid in B
11.30	13.7	1.2
11.40	7.3	7.0
12.00	6.4	6.4
12.20	6.4	6.3

This simple experiment is given merely to cite the fallacy in thinking of partial pressure as synonymous with barometric pressure. It also enables one to visualize the significance of communicating areas in establishing equilibrium of partial pressure between two gas fields of different concentrations.

VENTILATION OF PULMONARY BLOOD

If a respiratory unit is filled with alveolar air foam, then the area for the evolution of carbon dioxid is manifestly cut down from the large area of the respiratory membrane to the cross section of its bronchiole, and if at the end of an expiration the entire air space of the lung is filled with foam, the only area for the escape of carbon dioxid is the cross section of the trachea. It seems perfectly clear that any portion of the respiratory membrane which is covered by alveolar air foam will be deprived of its normal respiratory function, both for the escape of carbon dioxid and the absorption of oxygen. If at the end of a deep inspiration there is an unequal distribution of foam throughout the air spaces, different portions of the pulmonary blood will be ventilated in different degrees. If the patient takes a deep inspiration of 2,000 c.c., he will then have superventilation of some of the air spaces, and consequently, superventilation of the blood in these respiratory units, but the air spaces occupied by foam will be eliminated from the respiratory function. Consequently, we shall have admixtures of varying degrees of venous and arterial blood going to the left auricle. From the superventilated unit there will be contributed an effluent blood with saturated oxyhemoglobin and a partial pressure of carbon dioxid less than normal. From the foam units there will be contributed a blood with a high carbon dioxid content and a low oxygen content. The total effluent blood

from the lung under such circumstances will then contain an increase of carbon dioxid partial pressure and a low oxygen content. The superventilated units compensate in some measure for the want of ventilation in the foam units, so far as the partial pressure of carbon dioxid is concerned, but they cannot compensate for anoxemic blood which comes from the foam units and this I conceive to be the source of the disparity between anoxemia and air hunger in gas poisoning.

Now what will happen if the patient breathes pure oxygen? When pure oxygen is breathed, it will require several minutes before the alveolar air foam will have been changed to oxygen foam, and when the oxygen foam is once formed, what will have been accomplished for respiration? The foam units will have their entire respiratory membrane exposed to oxygen foam, and thus the area for the absorption of oxygen will have been many times increased. What has been accomplished for the ebullition of carbon dioxid? That will remain the same as when the patient is breathing atmospheric air and leaves the carbon dioxid content of effluent blood of the lung unchanged; but anoxemia will have been disposed of. This I conceive to be the explanation for the clinical fact that, after the inhalation of pure oxygen for a period of from three to five minutes, the patient regains a normal color but retains the same respiratory discomfort. This idea of the admixture of unrespired blood with the effluent stream has been ignored in clinical practice, yet we have an abundance of evidence that it occurs in congenital heart disease, occlusion of a single bronchus, lung consolidations, and moisture in the bronchial tree.

A child with an open ventricular septum and an open ductus botalli will be cyanotic, but has no air hunger when at rest. If he is given pure oxygen to breathe, the cyanosis remains unchanged. For under such circumstances the unrespired blood does not come in contact with the respiratory membrane. If the child exercises, cyanosis, as well as partial pressure of carbon dioxid in the aortic blood, will rapidly increase. Consequently with exercise, cyanosis and air hunger increase in equal paces.

If such a patient is instructed, while quietly sitting, to employ forced breathing for three minutes, cyanosis will diminish. But under these circumstances, ventilation of the lung and oxygenation of the blood and minute volume flow of blood through the lung will all be greatly increased. Thus when, in morbus caeruleus, ventilation is increased disproportionately to the increase in gaseous metabolism, anoxemia lessens and the carbon dioxid partial pressure in the blood will have greatly diminished. In morbus caeruleus we have an admixture of superventilated blood, in which there is a low partial pressure of carbon dioxid and a normal oxygen content, with another stream of blood which has a high carbon dioxid and a subnormal oxygen content. Consequently, there will be a disproportion between cyanosis and air hunger.

It is perfectly clear that in any disease in which unrespired blood is contributed to the aortic stream, the partial pressure of carbon dioxid and oxygen of the alveolar air cannot be accepted as the measure of the partial pressure of carbon dioxid and oxygen in the aortic blood. Gas analyses of alveolar air are applicable to the circulating blood only when every portion of the respiratory membrane exposed to ventilating air has also a normal exposure to circulating blood. Furthermore, in every part of the lung from which blood is contributed to the aortic stream, there must also be a normal exposure of the respiratory membrane to ventilating air. If these two conditions are not fulfilled, then interpretations from gas analyses of respired air will be erroneous.

CYANOSIS IN LOBAR PNEUMONIA

In lobar pneumonia there is always a certain amount of cyanosis. It is a common thing to see a patient with lobar pneumonia who has pronounced cyanosis and although the patient has moderate hyperpnea, he will deny any sensation of air hunger when he is questioned on the point. If blood flow through the pulmonary vessels of the consolidated lung is maintained, then the effluent blood from the consolidated lung must be venous blood. The superventilation of the uninvolved portion of the lung will compensate for the increased carbon dioxid contributed to the aortic stream from the consolidated lobe, but superventilation of the uninvolved parts of the lung will not compensate for the anoxemia which is contributed from the hepatized lung. In this mechanism we see an explanation for cyanosis without air hunger in lobar pneumonia. The cyanosis is due to anoxemia and not to methemoglobin, for when the shed blood is exposed to atmospheric air, it immediately takes on the normal color of shed blood. The anoxemia is not in any way associated with the infection. It is due purely to the admixture of unventilated blood with the aortic stream. When pneumonia terminates in crisis, cyanosis persists, and finally disappears just as the exudate is absorbed and ventilation of the affected lung is resumed.

The alveolar air of a pneumonia patient cannot be taken as an expression of the gaseous content of the aortic blood. One need only to estimate the carbon dioxid and oxygen content of the alveolar air of a pneumonia patient to be convinced of the fallacy. The patient will be cyanotic but in spite of this the partial pressure of oxygen in the alveolar air will be higher than in a normal person and the carbon dioxid partial pressure will be lower than normal.

During the past winter I have had many opportunities to test out lobar pneumonias. All the patients had cyanosis and the cyanosis was proportionate to the area of the lung which was involved, and was not at all associated with cardiac incompetence.

For instance, if one lung is hepatized and the other lung contains no moisture, the patient will have pronounced cyanosis with superventilation, but he will not admit that he has air hunger. If such a patient is given pure oxygen to breathe, cyanosis is unaffected. But if the patient has one lobe hepatized and an abundance of moisture in the remaining portions of the lung, then the inhalation of pure oxygen will partly diminish the cyanosis, but the experience of air hunger is unmodified. I think this accounts for the different views on the subject of oxygen therapy in pneumonia. A patient who is cyanotic from both lung consolidation and moisture in the air spaces will benefit from the inhalation of oxygen so far as anoxemia derived from the edematous lung is concerned, but he will not benefit by anoxemia so far as the consolidated lung is concerned.

A further proof of the origin of cyanosis in pneumonia lies in the fact that occasionally we see a patient in whom cyanosis is very pronounced and then ceases

without change in the exudate. Thus I have in mind two patients, one of whom was seen by Dr. R. G. Pearce and one by myself. Each had one entire lung consolidated, with normal heart and normal blood flow, so far as could be determined by physical examination, and no signs of moisture in uninvolved portions of the lungs. Then within twenty-four hours cyanosis ceased, although there was not the slightest evidence of improvement in the infection or improvement in consolidation of the lung. The only explanation I have for such a phenomenon is that during the course of the pneumonia the blood flow through the pulmonary vessels of the consolidated lung was greatly diminished at the time when cyanosis ceased.

The patient seen by Dr. Pearce died the day after the cyanosis disappeared, and the other patient under my observation, at Lakeside Hospital, made a good recovery.

Thus far there has been presented no direct evidence on which we can estimate the blood flow through the pulmonary vessels of a hepatized lung. It seems very reasonable to believe the blood flow through a hepatized lung is diminished by the loss of respiratory extension and retraction even when the pulmonary veins and arteries are patent. The anoxemia of lobar pneumonia and the fact this anoxemia is uninfluenced by the patient's breathing pure oxygen is very satisfactory evidence of the fact that an unrespired blood flow through the consolidated lung is the source of anoxemia. And the fact that anoxemia may cease or grow less during a period when fever, hepatization and the cardiac output are unchanged seems to be converse proof of the correctness of the theory.

It is a common experience to find patients with pleurisy with effusion sufficiently large completely to eliminate the lung of the affected side from respiratory function, and yet the patient may not have the slightest trace of cyanosis. In the compressed lung there is not only a want of ventilation but there is also a great diminution in the minute volume of blood going through the pulmonary circulation of the compressed lung. Consequently, there is little or no unrespired blood contributed to the aortic stream. This view will explain the want of cyanosis in many chronic tubercular diseases of the lung, and will also explain the presence of cyanosis in acute miliary tuberculosis.

In the chronic tubercular lung the ischemic process and the progress of infiltration go hand in hand. Consequently as a portion of the lung is eliminated from the respiratory function, its pulmonary circulation is encroached on, therefore such an involved portion of the lung will not contribute unrespired blood to the aortic stream. But acute miliary tuberculosis is accompanied by an abundance of moisture in the air spaces which will contribute unrespired blood to the aortic stream.

TWO CASES OF CARDIAC INCOMPETENCE

In former years we conceived air hunger and cyanosis accompanying incompetence of the left heart to depend on the diminished minute volume of blood passing through the lung. But since the rôle of moisture in the air spaces has assumed greater importance in our estimates of air hunger and cyanosis, I have had the opportunity of testing two cases of cardiac incompetence associated with pulmonary edema.

A patient had chronic cardiovascular and renal disease with great dilatation of the heart and of the jugular veins, a large and sensitive liver, and general anasarca. The patient had intense air hunger and was coughing up great quantities of bloody foam. He was given pure oxygen to breathe by means of a mask connected with a rebreathing device, so that he breathed pure oxygen through a bag of oxygen which was inserted into the circuit. The carbon dioxid was removed from the expired air by a canister of soda lime which was introduced into the circuit. Breathing through this closed system for about three minutes was sufficient to change the patient's color from pronounced cyanosis to a normal pink color, but the patient experienced the same air hunger and the volume and rate of respiration were unmodified.

Another patient was brought into Lakeside Hospital suffering from a head injury. The patient was in coma. He had a dilated heart and a great abundance of foam in his bronchial tree. This patient was made to breathe pure oxygen through a closed system and the same thing happened as in the patient above described. The pulmonary edema and the volume and rate of respiration were all unmodified. But after inhaling pure oxygen for about three minutes the patient regained a perfectly normal color, which he retained for a period of about four hours, during which time he breathed pure oxygen through the closed system. At the end of that time he died from cardiac failure, and although he had cardiac dilatation, a filiform pulse and extreme pulmonary edema, he had no cyanosis when he breathed pure oxygen.

We have here exactly the same mechanism as was cited in cases of gas poisoning. The alveolar air foam was changed to oxygen foam. This compensates for the anoxemia that existed when atmospheric air was breathed, but it did not compensate for the increase in the partial pressure of carbon dioxid in the aortic blood.

A THIRD CASE

Another experience illustrates the diagnostic service of this point of view.

A man, aged 19, was known to have stenosis and insufficiency of the aortic valve with hypertrophy and dilatation of the left ventricle. Four days before entering Lakeside Hospital he had an initial chill, followed by fever. Cough and bloody sputum developed on the following day. Coarse and fine moist râles were heard over all of both lung areas. On the day previous to his admission to the hospital so severe a cyanosis developed that the attending physician and the family were alarmed. The patient was deeply cyanotic, but he did not suffer from air hunger. Hyperpnea, however, was pronounced.

Chest examination revealed an abundance of moisture throughout all the air spaces of both lungs, but there was nowhere marked dulness or any areas of bronchial breathing. The right auricle was not dilated. The cardiac signs revealed a marked enlargement of the left ventricle and a moderate enlargement of the right ventricle, with auscultatory and pulse indications of stenosis and insufficiency of the aortic valve.

On microscopic examination the sputum proved to consist of blood and plasma. The number of white cells had about the same proportion to the red cells found in normal blood. The sputum, in fact, consisted of transudated plasma with a large admixture of red cells.

The patient breathed pure oxygen through a closed system for rebreathing and after about three minutes all cyanosis disappeared without any change in the rate or amplitude of respiration. The fluoroscope was then used and this showed no area of infiltration in either lung and confirmed the dimensions of the several heart chambers as determined previously by percussion and palpation.

Three days after admission to the hospital the temperature was normal, the râles and cyanosis disappeared and the patient's heart and pulse continued to show the same physical signs as on admission.

This case was regarded as an instance of the disease described by Woillez. Had there been any hepatization of the lung, anoxemia would not have completely ceased with the breathing of pure oxygen.

MOISTURE IN CYANOSIS

Moisture may play an important part in the development of cyanosis in patients who have bronchitis, emphysema, and bronchiolar spasm. In the past we have underestimated the rôle of moisture in the production of anoxemia.

A young man who had bronchitis, with an abundance of moisture in his air spaces, had pronounced cyanosis of the lips and fingers. There was only a moderate hyperpnea. It did not amount to air hunger. There were no demonstrable areas of consolidation in the lung. The volume of the lung was very little increased, not enough, indeed, so that the pleural sinuses were filled with the lung. The patient's heart and vascular system showed no evidences of any circulatory impairment.

He breathed oxygen through the closed system and after he had inhaled it for about three minutes, all traces of cyanosis disappeared. But he breathed with exactly the same rate and volume as when he was breathing atmospheric air, and he could not detect any difference between his subjective experience when he was breathing oxygen and his experience when he was breathing air. This I conceive to be very important in estimating the functional disability in patients suffering from cardiorespiratory disease.

I am sure that in the past we have ignored the rôle of moisture in the air spaces and we have quite ignored the contribution of unrespired blood to the aortic stream. Nor has there been any attempt to point out the mechanism of this contribution in diseases of the heart and of the lung.

If, for instance, a patient with bronchitis and emphysema has cyanosis, and it can be demonstrated by inhalation of pure oxygen that the patient's anoxemia has its origin in moisture in the air spaces, then the indication for a change to a dry climate is perfectly clear. If his cyanosis is unmodified by inhalation of pure oxygen, then I think it is quite clear that the presence of moisture in the air spaces does not contribute to cyanosis and a dry climate will not improve his cyanosis.

The very simplest way in which unrespired blood can be caused to flow into the aortic stream is to stop a bronchus.

CYANOSIS INTERPRETED BY AN EXPERIMENT

About two years ago Dr. Pearce and I made a very simple experiment on a dog. A tampon of lamb's wool with a string attached was pushed down through a tracheal opening into the bronchus leading to the right lobe of the lung. This of course eliminated the right lobe from air ventilation but did not arrest the flow of blood through the pulmonary vessels. So far as the appearance of the buccal mucosa and the tongue of the animal was concerned, we could see no change in color. But during the time the tampon was in the right bronchus, blood was drawn from the femoral artery and put in test tubes under analine oil so the blood was not exposed to air. It was apparent during the period when the bronchus was blocked that the blood had a much darker color than when the bronchus was free. This was done repeatedly by withdrawing the tampon and replacing it, but at each time when the tampon was in place the aortic blood took on a venous hue. Whether the entire right bronchus or only the bronchus leading to the lower right lobe was occluded in each one of these trials was not determined, but from observations on the respiratory movement of the lobes, we believe the lower right lobe only was eliminated from ventilation in most of our trials.

In either event it is a very simple method of demonstrating how a certain proportion of unrespired blood going to the left auricle will produce cyanosis. In our clinical experience we usually see only the phenomena for which we have an interpretation. What we cannot interpret we fail to see. As our interpretation of cyanosis is improved and enlarged, cyanosis will be much more frequently recognized in clinical experiences.

In the study of respiratory phenomena of cardiorespiratory disease, the rôle of moisture must be carefully interpreted. If we employ analyses of alveolar air for interpreting the partial pressure of oxygen and carbon dioxid in the circulating blood, such interpretations must predicate a uniform tonometric function of the entire respiratory area.

If areas of the respiratory membrane are eliminated from the respiratory function and other portions are normally functionating then it is obvious that the respired air cannot be employed to interpret the partial pressure of carbon dioxid and oxygen in the blood. When the entire respiratory membrane is normally functionating, then such interpretations are justifiable. But the moment the rôle of moisture in air spaces comes into play, or the air spaces of the lung are filled with an exudate, without any change in the flow of blood through the pulmonary vessels to the affected part, there will be unrespired blood contributed to the aortic stream, and analysis of respired air will give wholly unreliable interpretations of blood gases.

SUMMARY

The significance of the foregoing observations lies in the recognition of dissociation between anoxemia and increased carbon dioxid content of the blood.

The carbon dioxid and the oxygen content of respired air are measures of transpiration between blood and alveolar air only when the entire minute volume of blood passing through the pulmonary circulation is exposed to a respiratory membrane which has a uniform exposure to the ventilating air of the lungs. Normal subjects and patients with stenosis of the trachea or larynx will conform to these premises. So may patients who have respiratory symptoms from disturbed responses or altered control of respiratory rate and rhythm from the central or peripheral nerve supply to the lungs. But the moment the process of ventilation or blood flow is modified so that the uniformity of transpiration in the entire lung between the circulating blood and ventilating air is disturbed, then analyses of respired air cannot be employed to interpret the carbon dioxid and oxygen content of the blood.

ABSTRACT OF DISCUSSION

Dr. Arthur D. Hirschfelder, Minneapolis: I would like to ask Dr. Hoover whether sodium bicarbonate would be of value in such cases, at least in some of the border-line cases?

Dr. Charles F. Hoover, Cleveland: It is the same with all irritant gases; all the acids produce exactly the same thing. What is your idea of the alkali?

Dr. Hirschfelder: You could take care of a certain amount of the carbon dioxid excreted from the kidneys by continuous intravenous infusion of sodium bicarbonate. It seems to me there might be some border-line cases in which that might turn the tide.

Dr. Charles F. Hoover, Cleveland: I doubt if you could do very much in the way of luring it off in the form of a carbon through the kidneys. There are not any border-line cases.

EXTENDING THE CARE OF PREGNANCY *

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The question of prenatal care, or in other words, the supervision of pregnancy in the interest of mother and child, is attracting a great deal of attention. Have we any new measures to report? Has the laboratory or the clinician recently brought to light novel methods of therapy or prophylaxis? As a matter of fact, very little has been added to what has been known for years about the care of pregnancy.

Yet some groups of women in this country are benefiting by good prenatal care and their mortality rate and that of their infants is being lowered, while the greater number suffer from inadequate care and the mortality statistics show the humiliating results.

For twenty years the death rate from childbirth for women in America has not decreased.[1] Meanwhile, many formidable diseases have yielded to medical science and claim fewer and fewer victims. Tuberculosis, typhoid, diarrheal diseases of infancy and diphtheria all show lower death rates, the latter a reduction of 50 per cent. It may be justly said that more new measures have been brought forward for the treament of these diseases. Nevertheless, the means already at our command, if we employed them generally, could reduce this mortality of mother and child. Among sixteen enlightened nations we rank fourteenth. Only Switzerland and Spain come lower on the list. Sweden has a death rate of less than half of ours.

REGULATION OF MIDWIVES

For some reason, women in America receive bad obstetric care. Yet physicians attend the confinements in America more generally than in the European countries. This is not a country where the midwife flourishes. In the larger cities, where there are extensive foreign populations, there are many midwives. In New York, for example, they still attend about one third of the confinements. However, you do not hear so much in New York about the midwife menace as you did formerly. We still have the midwives, but they are no longer such a menace. Jacob Sobel, chief of baby welfare, New York Department of Health, says of the midwives:[2]

> The fact is that in comparison with our medical confrères, the midwives are listed on the credit side of the ledger as this relates to the percentage of deaths from puerperal sepsis, from stillbirths, deaths during the first week of life and cases of ophthalmia neonatorum.

This has not always been so. But the midwife has been regulated and closely watched. She has been taught just how far she must go and when she must call for medical assistance. Moreover, in what she is permitted to do, there are certain measures she must take, on penalty of losing her license. In other words, she is policed. The doctor is permitted to learn the right and wrong in obstetric practice, but he is policed only by his own conscience.

In America, where the practice of midwifery is in the hands of the medical profession, the doctor must bear the stigma of the bad record. It is the doctor who must institute the measures that will raise the standard of this branch of practice.

PRACTICAL GAINS FROM PRENATAL CARE

It has been shown that prenatal care will diminish maternal mortality and morbidity, and will lessen the number of infant deaths in the first month of life, and the number of stillbirths.

The Committee for the Reduction of Infant Mortality of the New York Milk Commission, in about 3,000 cases which were closely supervised during pregnancy, report a 69 per cent. decrease in maternal mortality, a 28 per cent. decrease in deaths of infants under 1 month, and a 22 per cent. decrease in stillbirths.[3] Davis,[4] Lobenstine,[5] Emmons,[6] and many others show favorable results.

The women are willing to be supervised. At the John E. Berwind Free Maternity Clinic, we stamp on each applicant's card the dates on which she is to return for the prenatal clinic. If she does not come, we send a nurse for her. But most of the patients are responsive and there is already an attendance of from 150 to 200 a month at the prenatal clinic. Throughout the country wherever investigation of this subject has been undertaken, it has been found that the pregnant women eagerly welcome prenatal care. If this care of pregnancy will improve conditions, and the patients, when enlightened, are anxious to have this care, it is our duty to provide it.

STANDARDS OF PRENATAL CARE

We must first arrive at a standard of what we consider satisfactory care. Dr. J. Whitridge Williams has prepared for the Children's Bureau of the Department of Labor, the following fair standard of medical prenatal care:[7]

1. A general physical examination including an examination of heart, lungs, abdomen.
2. Measurement of the pelvis in a first pregnancy to determine whether there is any deformity which is likely to interfere with birth.
3. Continued supervision by the physician at least through the last five months of pregnancy.
4. Monthly examinations of the urine, at least during the last five months.

The Maternity Service Association of New York, comprising practically all the Maternity Hospitals of Manhattan, has accepted as the minimum of prenatal care substantially the same standard, specifying also a blood pressure estimation at each visit and a Wassermann test in every suspicious case.

But more than 70 per cent. of the women of New York are cared for by private physicians or midwives and are not included in the benefits of this newly created standard.

RURAL AND URBAN CARE OF PREGNANCY

The Children's Bureau of the Department of Labor has made a study of obstetrics in the rural districts.[8]

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

1. Meigs, Grace L.: Maternal Mortality from All Conditions Connected with Childbirth; U. S. Dept. of Labor, Children's Bureau, Bureau Publication 19, p. 17.
2. Sobel, J.: Supervision of Expectant Mothers, New York Med. Jour., 1918, **107**, 108.
3. Report of an Experiment in Prenatal Care, 1912-1916, New York Milk Commission, 105 East Twenty-Second Street, New York.
4. Davis, M. M.: Relations of Prenatal and Postnatal Work, Boston Med. and Surg. Jour., 1917, **17**, 264.
5. Lobenstine, R. W.: Development of Prenatal Care in the Borough of Manhattan, Am. Jour. Obst., 1917, **76**, 392.
6. Emmons, A. B.: Prenatal care, Am. Jour. Obst., 1917, **76**, 401.
7. Rural Child Welfare, Series 1, U. S. Dept. of Labor, Bureau publication 26, p. 28.
8. Meigs, Grace L.: Rural Obstetrics, U. S. Dept. of Labor, Washington, D. C.

In one district in a prosperous community, forty-eight of the fifty mothers interviewed had been attended by a physician at their last confinement. Only seven of the fifty mothers had had any prenatal care by a physician, one visit being paid in each case; and only three had had urinalysis.

In another section, a plantation district in the South, of fifty women interviewed, twenty-six were white and twenty-four colored. Only ten white mothers were attended at their last labor by a physician. Fifteen white mothers and all twenty-four colored women were attended by colored midwives. These midwives were not licensed, trained or supervised.

In some of the larger cities, well organized movements are now under way for the better care of pregnancy. Maternity centers are being established by various agencies, through which prenatal care is provided for the women without prejudice to the physicians, midwives or hospitals who may be chosen to attend them in the coming confinement. The various health boards have joined in this work. In the borough of Manhattan, a zoning system has been arranged so that each hospital limits its service to an area in its immediate neighborhood, making it easy for the patients to come to the clinics for consultation and examination or for the prenatal nurses to visit them. In Zone 7 an intensive study is being made through the efforts of several organizations and a house to house canvass for pregnancies is made to secure complete early registration. It is evident that certain women are to be favored by better supervision.

Our purpose must be to extend the care of pregnancy to all classes of women in the cities, towns, villages and rural districts. Some progress has been made by certain townships through local visiting nurses' organizations, mothers' meetings and other useful agencies. At the most, however, we can say only that a little progress has been made here and there.

A NATIONAL PROBLEM

The problem is complex. Moreover, it is immediate. At the present time, we are painfully awake to the necessity of conservation of life. Over 15,000 women are lost in the United States each year in childbirth. Many more lose their future efficiency from the same cause through invalidism. Of all the deadly diseases only tuberculosis claims more victims among women of child-bearing age. It would seem that this is a national problem.

We find the statement made by the most earnest of the investigators of this subject that it would be impossible to extend intensive supervision of pregnancy throughout the land on account of the cost. But why reckon the cost? There is, if we consider the loss of mothers, the stillbirths and the deaths of infants under 1 month, a probable salvage of 75,000 lives annually. Every woman confined in the United States could have one week's trained nursing at a cost of $60,000,000. We are in an atmosphere of war costs and have been educated to colossal expenditures. We are no longer staggered at an outlay of $6,000,000,000 for heavy artillery.

This matter of reducing obstetric mortality is properly a war measure. Obviously I do not propose the furnishing of a nurse to every confinement patient at government expense, but have quoted the cost for comparison with other war expenses.

Sooner or later, we shall have a national board of health and a medical cabinet officer. Let the government begin with a national commission to conserve motherhood. Let this commission be empowered not only to study the question and to organize cooperation among existing agencies, but to spend money in creating a system of rural nursing. Let it create and train a body of government nurses. Let it establish, if it sees fit, prematernity hospitals for the reception of patients requiring close supervision and too remotely placed to obtain it. Let it furnish the money necessary to extend the work of organizations working along the same lines in the cities and towns. I shall not attempt in this brief paper to sketch a plan for the details of this work. But great as is its scope, it is not too large a problem for the resources of this nation, nor for the genius of the medical profession. This society should take the initiative and its members are the best qualified to plan the work and to carry it out. Undertaken as a measure to economize life in this crisis of sacrifices for self-preservation, it will survive to ease the trials of womanhood when, once free from our torments, we may feel again the purpose of making life beautiful.

THE PHYSICIAN'S GAIN

The physician as an individual will lose none of his dignity nor his benefits if women receive this additional care of pregnancy and parturition. On the contrary, the importance of obstetric care will be realized, as education on this subject is spread. He will be called on to give more of his time and he will be paid for it. As the knowledge grows that the attendance of pregnancy and labor and the guarding of young infant life is a great and important scientific function, the market will be created for good obstetric care and the practice of midwifery will be worth while. Doctors will no longer take cases reluctantly for reasons of policy, realizing as they take them, that if they give all the attention the subject demands, they are donating two thirds of their services and being paid for one third. Also, according to economic laws, when the demand is created for higher efficiency, and more careful service, the supply of good midwifery will be forthcoming. A national measure for the supervision of pregnancy will create the demand. This society should not delay in taking the steps to inaugurate this movement. It is inevitable that when our country comes to count its losses and searches for places at which to save, this great gap from which so many lives are leaking will not be overlooked. We should be the first to recognize and repair it.

Let the American Medical Association ask for a national commission to promote the care of childbirth as a war measure, with appropriations of money commensurate with the importance of the work according to the standard of other war measures.

Then let the United States, through the efficiency of the medical profession, take its place as leader among the nations in the care of childbirth. We are fighting to make America a safe place in which to live. Let us make it a safe place in which to be born.

ABSTRACT OF DISCUSSION

Dr. Wilmer Krusen, Philadelphia: In Philadelphia we are trying to convince the municipal authorities of the necessity of appropriating money for the Division of Child Hygiene which has the supervision of prenatal work. When, however, we listened to the broad program presented by Dr.

Hill we see that the question is not one of municipal, county or state, but really an international problem, because Dr. Hill wants to remove from the United States the stigma of being the fourteenth on the list in regard to the mortality of the mother and bring us up to the first place. The necessary information and influence to inspire our government to this action must be found in the 144,000 or more members of the medical profession, many of whom are members of this Association. No work is more important. It is just as important to conserve the life of the mother as that of the newborn child. The Children's Bureau of Philadelphia is seeking to save at least 100,000 of the 300,000 children who die before the sixth year.

DR. J. H. CARSTENS, Detroit: We can accomplish this work in various ways. We now teach better obstetrics than we have in the past. We are requiring that students actually attend cases of confinement, and they are learning the details of the management of the work. In the college with which I am connected we require the student to attend twelve cases and to keep an accurate record of the details. The midwife does not seem to have a large number of infant mortalities. This, however, is only apparent, and it must be remembered that in a serious case the midwife calls in a physician. He has to sign the death certificate and gets the blame. It is a matter of education of the public. We must agitate the question until boards of health and nurses educate the people so that every woman may know that when she is pregnant (although the process is a physiologic one), it may become a very serious surgical case and that she should consult a doctor. Of course, to educate the people necessitates the help of boards of health, nurses and investigators of all kinds. The suggestion made by Dr. Hill of having the United States take hold of the matter seems eminently proper. If the United States can afford many thousands of dollars to take care of hogs it certainly can afford hundreds of thousands to take care of women and children. We should use our influence with our congressmen. If we do this we can probably get Congress to do something for the health of the pregnant women. Much could be done, as Dr. Hill has said, with a health officer a member of the cabinet. From him this work would radiate throughout the country and we should have in every district a health officer instructing the people in the matter of health.

DR. IRVING F. STEIN, Chicago: In Chicago we are doing much the same work as that described by Dr. Hill. At the Michael Reese Hospital we have a prenatal clinic in which we have seen as many as seventy-eight women in one morning. The clinic meets twice a week. The blood pressure and urinalysis is taken at every visit. The first visit comprises a complete physical examination, including observations of the thyroid, the teeth, the breasts, the heart, the limbs for varices, etc. We try to educate the women in the care of their teeth and in the wearing of abdominal supports. If they wear corsets, we show them how to wear them properly. The incidence of eclampsia has been markedly reduced since the inauguration of the clinic. The pathologic cases are recognized early, are sent into the maternity for observation and consultation, and cared for before they become "neglected cases."

DR. IRA L. HILL, New York: In my reference to the midwives I brought the matter up not to praise them but to show how much their work had progressed since they were under supervision. Regarding the investigations being made in Washington by the Department of Labor through the Children's Bureau, it is interesting to know that the greatest inspiration for any one who has had occasion to do any work in the study of prenatal statistics comes from that bureau, and that the two hundred and some odd thousand dollars which they have had for this work represents a tax of a third of a cent a year for all the inhabitants. Our government, therefore, could probably afford to spend considerably more and still not be working any injustice to the people.

Experimentation.—It is too often overlooked that for century after century Nature has been pitilessly performing her crude and cruel experiments and killing millions of human beings every year.—W. W. Keen.

A NEW PRINCIPLE IN THE SURGICAL TREATMENT OF BRAIN TUMORS *

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MINNEAPOLIS

Craniotomy for brain tumor, with or without focal symptoms, not infrequently fails to disclose the neoplasm. The evidence of increased intracranial pressure will be manifest by various degrees of brain bulging, by a flattening out of the convolutions, by obliteration of the sulci and by diminished or absent brain pulsation. Inspection, palpation, and exploration by incision or aspirating needle all fail to locate or reveal the cause. The tumor may be so deep within the brain substances or at such a stage of development as to be inaccessible. The lesion may be an infiltrating glioma, which cannot be macroscopically differentiated from the normal brain, or the craniotomy may not have been formed at the proper site. The wound is closed, temporary benefit is conferred by the decompression, and in time the patient dies.

Definite localizing information may develop after decompression in cases in which focal symptoms have been absent. In these cases, patients have been not infrequently reoperated on and the brain tumors successfully enucleated. The cases with focal symptoms before operation, and those without, which do not develop localizing data after negative exploration, are considered hopeless and the patients are permitted to die. The necropsy shows the tumor, or no further investigation is made. My discussion is limited to this latter type, the "hopeless" case, which deserves further consideration and should not be given up, for the tumor may and can be removed at times, as illustrated in the following case from the University Hospital.

REPORT OF CASE

CASE 11487.—E. L. B., a man, aged 29 years, was admitted to the neurologic service of Dr. A. S. Hamilton, July 8, 1917, on the application diagnosis of cerebral syphilis, complaining of excruciating headache, impaired vision, spastic paralysis of the left arm and leg, and general weakness. He had had several attacks of unconsciousness lasting from one to two hours. There was slight incontinence of the bowel and the bladder. The administration of potassium iodid and mercury had been followed by improvement of symptoms. The blood and spinal fluid Wassermann reactions were negative. Bilateral papilledema were present, more pronounced in the right eye ground. He had several typical jacksonian seizures while in the neurologic service, the attacks beginning in the left foot and extending up the body, involving the leg, the arm and the face. The diagnosis of cerebral neoplasm in the right rolandic area was made, and the case was transferred to the surgical service.

July 24, 1917, a large osteoplastic flap opening was made over the right motor area of the brain. When the dura was opened the brain began to bulge. The intracranial pressure was extreme, the cortical vessels were engorged, and the surface of the brain became smooth and flat, the sulci and convolutions being flattened out and obliterated. Inspection, palpation and exploration with Cushing's aspiration needle failed to disclose the neoplasm. Aspiration of the lateral ventricle was performed. The cerebral pressure was so great that the bone trap door had to be removed to effect a closure. The case was considered as being a deep-seated lesion or an

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infiltrating and irremovable glioma. In other words, the case was in the "hopeless class" described before.

The patient was definitely improved by the decompression and asserted that his unbearable headache had gone the same day of the operation. The acuity of vision improved, as did the choked disks. The wound healed per primum. Bulging of the brain under the scalp was present.

There gradually developed an accumulation of cerebrospinal fluid and a cystoid degeneration of the scar forming a cystic mass the size of a fist. This mass transmitted light and sunshine like a hydrocele, was soft, fluctuating and painless. Aspiration of the fluid was considered. Four months had now elapsed since the exploratory operation.

In studying the case I began to develop the idea that even though it had been impossible to locate and to remove the tumor at the previous operation, change and growth might have taken place in the interim, such as to make the neoplasm now accessible. A deeply seated growth might have come to the surface, or nearer to the surface, and now be removable.

Nov. 16, 1917, the patient was reoperated on. An incision was made through the old scar, the fluid was evacuated and the flap elevated. When the brain was uncovered, a thin, blue-walled cyst of the size of a goose egg was disclosed. Under the most gentle manipulation the cyst ruptured. On further examination the cyst was found to be embedded in a definite tumor mass and the lesion was evidently one of cystic development in a glioma or sarcoma, the latter neoplasms being prone to cystic degeneration. The overlying cortex was incised to facilitate removal. During this incision the anesthetist remarked that the left side of the face twitched. There was a definite line of demarcation between the tumor and the surrounding brain. By the most careful manipulation with the index finger, working to a depth of its length, and with the assistance of a teaspoon, the tumor, the size of an orange, was freed and delivered. The remaining cavity was gently packed with a hot cotton wad to control oozing, and several cerebral vessels were ligated. On removal of the hemostatic pack the brain gradually filled in the cavity and at the same time of closure the cavity had become practically obliterated. The patient made an uneventful recovery.

On the second day the movements of the arm were definitely improved over the preoperative condition. The mentality improved and in several weeks the patient was up and walking with perfect control of his sphincters.

IMPORTANCE OF THE CASE

A deep-seated tumor had evidently developed, and by the assistance of the cystic degeneration had come to the surface during the interval between the two operations. The decompression may have had a favorable influence in causing the growth to point and to be in a degree spontaneously extruded.

This case establishes a precedent, and illustrates a principle which, if followed, will in some cases prolong and in others save lives from the class which have been given a chance and then considered "hopeless." It turns defeat into victory. The practice in the foregoing hopeless cases should be reoperation at a favorable time, which will vary in different cases. The patients should not be given up. Without reoperation, the patient has been given only half a chance.

The medical profession as a whole is too pessimistic in its attitude toward neurologic surgery. Practically every field of successful modern surgery has had to pass through its trying and discouraging period of unsatisfactory results. This has been particularly true of the brain. Neurologic surgery is emerging from its dark age and is becoming a comparatively safe practice in the hands of the specially trained.

When we consider that the inevitable fate of the brain tumor patient is death, which becomes a kind relief from indescribable physical and mental suffering including blindness, the single successful removal of such a growth with complete restoration to the normal is a reward and satisfaction that cannot be measured.

I have performed thirty-six craniotomies with two operative mortalities. The first was a tumor of the cerebellum, the patient being somnolent and so far moribund that he died twenty-four hours after an uncomplicated suboccipital decompression. The second died from a large, deeply seated, irremovable cerebral tumor. Bilateral decompression was performed but was insufficient to relieve the medullary compression. There were two cases of postoperative pneumonia, which would ordinarily be considered "post ether" and attributed incorrectly to the anesthetic, had not the one followed a local anesthesia decompression.

ADVANTAGES OF DECOMPRESSION

The following views and principles of practice are based on the work of a number of neurologic surgeons and on the writer's personal experience. Every patient with a brain tumor is entitled to a chance and at least to a decompression. Any degree of papilledema calls for an immediate decompression, the operation being imperative and emergent. Organization obtains very early and when optic atrophy has once begun, it may be impossible even to halt its progress. Decompression after atrophy is "locking the barn after the horse is gone." With choked disks present, decompression may be just as imperative to save sight with a positive Wassermann reaction as with a negative. The decompression should be large enough actually to relieve the intracranial pressure, otherwise its performance is worse than useless. It should measure 5 by 7 cm. at least. I perform the Cushing subtemporal muscle-splitting operation for cerebral growths and suboccipital decompression for tumors below the tentorium. The subtemporal operation may be performed under local anesthesia when indicated. The dura is always opened, preferably by flap formation, a marginal cuff being left to cover the decompression circumference.

Decompression alone brings great relief for the insufferable headache, saves the vision and at times even in case of irremovable growths, restores the patient for a long period of usefulness. It is nearly unbelievable, after decompression or large osteoplastic flap operation, to have patients say, immediately on coming out from under the anesthetic, or on the day following, that their excruciating headache is gone and that they are comfortable.

A preliminary subtemporal decompression is performed in nearly all cerebral growths on the side opposite the suspected lesion. This makes the ultimate decompression in irremovable growths bilateral and symmetrical. The onesided bulging at times causes undue tension on the brain stem and interference with brain function due to the distortion. The relief afforded from intracranial pressure makes the second operation for removal safe and less hemorrhagic, and permits a more frequent return of the osteoplastic trap door. Aspiration of the ventricles frequently relieves the pressure and is a routine procedure in extreme pressure.

The problem is that of dealing with a brain under such pressure that the vital centers in the medulla are on the verge of paralysis with the death of the patient as a consequence. Any additional compression on the already overcrowded medullary centers as caused by the passage of the Gigli saw between the trephine openings may be just sufficient to be the "last straw" and cause death. The preliminary decompression guards against this occurrence.

From a week to ten days after the preliminary decompression, an osteoplastic trap-door opening is made over the diagnosticated site of the tumor. A large, generous opening is of the greatest importance, so that, no matter what condition may be found, it may be adequately dealt with. Lesions have been missed by being just outside a small exposed area of the brain. Patients do not die from having large osteoplastic flaps, properly formed, but they do from small ones. The intracranial pressure previously described is relieved by a large exposure. On the introduction of the finger and instruments into the brain substance for the removal of the tumor, room is provided for the expansion and bulging of the brain and the overcrowded vital, medullary centers are again saved from paralysis. In other words, fatal medullary compression is avoided. This, in my opinion, is one of the most important factors in the successful removal of brain tumors, yet it is not adequately appreciated.

During the anesthetization of the patient in brain tumor operations, cessation of respiration is of rather common occurrence, being due to the increased pressure on the already crowded medullary respiratory centers by the congestion of the brain caused by the ether. Clinical observation and animal experimentation have established the fact that respiration stops under cerebral compression long before cessation of heartbeat, and that the cardiac function can be kept up for long periods by artificial respiration.

MITIGATION OF SHOCK

Another factor responsible for death in brain operations is shock. Shock in general surgery is in great measure synonymous with hemorrhage. The excessive loss of blood indirectly produces shock. Hemorrhage is under the control of the operator and the greatest attention to hemostasis is essential to success. Horsley's bone wax and the wooden peg are employed for osseous hemorrhage and Cushing's cotton compresses and the ligature for cerebral.

In my experience, the Haidenhein hemostatic suture has proved more satisfactory than the Cushing tourniquet or Makka's clips for the control of bleeding from the scalp.

Injudicious handling of the brain and the infliction of compression and concussion directly produce shock. The greatest care and gentleness is to be exercised. Rapidity of operating is to be avoided. I believe that direct shock of the latter type is as much subject to the law of dosage and concentration as is strychnin and like toxic drugs. A weak solution administered over a period of time will be tolerated, while a concentrated dose will kill. Too speedy operating in neurologic surgery is equivalent to the inflicting of a concentrated dose of shock. This is in direct contradiction to the regular statement of textbooks which all laud rapid removal of the tumor. This I believe to be absolutely incorrect.

As illustrative of the technic of diminishing shock, in removing a glioma the size of a goose egg from the upper right motor region in a patient at the Abbott Hospital, after incising the cortex, I consumed about ten minutes or more in practically watching and gently assisting the spontaneous extrusion of the neoplasm. The case resembled an unassisted obstetric delivery. Forceps might have been applied, but were not. Here likewise the tumor was spontaneously delivered by the intracerebral pressure.

The osteoplastic trap door is cut with a broad bevel so that a solid replacement may be effected and firm sutures and snug bandaging be free from exerting pressure on the underlying brain. In irremovable brain tumors, it is desirable to rongeur away a large portion of the base of the hinge area of the bone flap. This provides for generous decompression, and by the return of the beveled margin, the undisturbed muscles over the decompressed area control herniation of the brain.

I believe that technic should be simple and that the trephine, Gigli saw, and bone-biting forceps, which always work, inflict less insult and are better and safer than electrically driven circular saws, drills and burs, which are supposed to lock when through the skull, and which in reality do not always do so. As a hand-sewed shoe is superior to a machine-made one, so is a hand performed operation superior to one performed by machine.

CONCLUSIONS

Brain tumor cases following negative craniotomy are not necessarily hopeless. A deep-seated, inaccessible lesion may develop in time, come to or near the surface, and so become removable. The decompression may have a favorable influence in causing the growth to point, and to be in a degree spontaneously extruded. Such a case given a single exploration has had only half a chance. Reoperation may turn defeat into victory.

Shock is the principal cause of operative deaths in neurologic surgery. Direct shock is subject to the laws of concentration and dosage. Rapid operating is equivalent to the infliction of a concentrated dose of shock and is to be avoided.

Indirect shock is synonymous with hemorrhage and is within the control of the operator.

Large decompressions and operative field exposures relieve and avoid medullary compression and are essential to success.

In the hands of the specially trained and experienced the operative mortality in neurologic surgery compares favorably with that in other branches of surgery. Without surgical intervention, the inevitable fate of the patient afflicted with a brain tumor is death. Surgery alone can save sight, alleviate indescribable physical and mental suffering, prolong life and at times establish a cure.

ABSTRACT OF DISCUSSION

DR. L. L. MCARTHUR, Chicago: This has been a recognized procedure for many years. Ten years ago I saw Victor Horsley remove for the second time at the third operation, a tumor of the brain which had recurred in loco, by repeating the elevation of the flap and by simple enucleation with the finger. At the first operation the tumor was not localizable, but it presented at the second operation. Localization of brain tumors is the great difficulty. He demonstrated how easy it was to be mistaken as to the location of brain tumors on the basis of symptoms. By putting a needle into the dentate nucleus of the cerebellum of a monkey he could get a lateral deviation of both eyes to the right, which symptom has been taken to indicate a cerebellar tumor. He put the same needle an inch higher up in the posterior occipital lobe and demonstrated that the same phenomenon obtained. He moved it forward to the motor area, and there again over a third place, widely removed, he produced a typical deviation of the eyes to the right so that the difficulty of localization is still a bugbear. The statement the author makes that the localization sometimes becomes evident after a decompression is an important one. Its importance is

emphasized more promptly by the more simple procedure of making a callosal leak in the roof of the lateral ventricle on the side on which the neurologists believe the tumor to be. By doing so the roof of this ventricle leaks. It leaks outward instead of inward, and relief of the tension and decompression is obtained with the least possible mutilation. Then the focal symptoms may develop which will enable the surgeons to make the operative procedure, which is recommended by the author. The patient should have, then, the opportunity for the tumor to be crowded by the intracranial pressure toward the lines of least resistance, and should again be explored when the time has sufficiently elapsed to enable him to do so. Not infrequently it is possible in these frightfully deformed cases which follow these lateral osteoplastic flaps to remove a tumor which had deformed the patient until he is an object of repugnance, by making just such an exploration. The procedure and the recommendations of the author are to be recommended.

DR. ARTHUR C. STRACHAUER, Minneapolis: It is the regular practice, or so frequently so, after a negative exploration, to permit these patients to die. Last winter I saw a case in which a negative subtemporal decompression had been performed. The patient died with a large cyst, which undoubtedly would have been amenable to treatment. There is nothing new about reoperating in cases where nothing was found, then have localizing symptoms develop, operate and remove the tumor. That has been a recognized practice for many years. It is common to operate these cases a second, third and even a fourth time. But it is the cases in which nothing has been found by the evidence of intracerebral pressure, that I particularly wanted to call attention to, and in which following decompression no further symptoms of localizing value developed. These patients should not be permitted to die, because there is a possibility of removing a neoplasm.

UTERINE INERTIA

SUMMARY OF A SERIES OF CASES *

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The classification and analysis of cases of uterine inertia are somewhat difficult because the term uterine inertia is indicative of a more or less intangible condition. Inertia of a laboring uterus cannot be established on a time basis, since there are a great many factors which make it a relative rather than an absolute entity. For instance, a primipara delivering herself of an average sized infant, and a multipara giving birth to a small baby after her uterine muscle tone has been impaired by a number of pregnancies closely following each other, might both consume the same length of time in accomplishing a different amount of work. This normal period of time for the first woman to be in labor would be abnormal for the second woman, and it could be said of the latter that she had inertia because her pains were of poor quality in regard to length and strength.

It is not known exactly why a woman falls into labor at the end of about 280 days of pregnancy. It might just as well have been normal, so far as the welfare of the fetus is concerned, for a pregnancy to consume eleven or twelve lunar months instead of ten. As it is, we can only say that when the fetus is mature, namely, at the end of ten lunar months, labor usually begins. If the stimulus to its induction is normal and the uterine muscle tone is good, labor will go on actively and progressively. On the other hand, some cases in which labor has been artificially induced by means of bags and bougies, as well as many in which labor is instituted by premature rupture of the membranes, exhibit uterine inertia of varying degrees.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

PRIMARY AND SECONDARY INERTIA

The propriety of classifying uterine inertia as primary or secondary is extremely doubtful. In fact, true uterine inertia is practically always primary, since it is due to some inherent fault in uterine muscle tone, or at least to a lack of normal stimulus to its contractile power. In making the distinction between so-called primary and secondary inertia, it should be pointed out that the term inertia is defined as "an incapability of matter to change its state whether that be one of rest or motion," or a "sluggishness," or "an indisposition to exertion." This may be secondary to some constitutional debility of the patient such as pulmonary tuberculosis, or to an early rupture of the membranes, or over distention of the uterus from either hydramnios, twins, or frequent pregnancies, and in this respect the term secondary might be permissible. That is not, however, the significance given it by common usage. Inertia, arising early in labor from causes like these, is commonly called primary, while the term secondary inertia has come to convey the idea of a sluggishness arising later in the course of a labor, in which the pains had been normal up to that point. We are told, for instance, that neglected labor in contracted pelvis or with malpositions develops into secondary inertia, whereas I maintain that this is not uterine inertia, but rather uterine exhaustion.

It will be said that this is splitting hairs, and that, if the uterine contractions are ineffective, because the uterus is inert or exhausted, as the case may be, the conditions which obtain are identical and the general treatment is similar in both cases. This is not quite correct, however, because the distinction between inertia and exhaustion has a definite bearing on both the treatment and the prognosis in the two instances.

DISTINCTION BETWEEN INERTIA AND EXHAUSTION

The origin of the two conditions is not identical, for inertia is due to an inherent fault while exhaustion follows a long continued effort against an obstacle. Prophylactic treatment is obviously different. In the true inertia there is comparatively little to be done by way of prevention, whereas one should anticipate or do away with such obstacles to labor as contracted pelvis or occiput posterior and face presentations, to mention a few examples. In this series I have purposely avoided discussing cases of uterine exhaustion since this is a question for treatment directed at the underlying cause of the exhaustion.

True inertia is first noticed in the first stage of labor. With unruptured membranes a prolongation of the first stage is not often serious and usually the patient may be carried on indefinitely by such means as narcotics, or the mild stimulation of hot enemas, strychnin, quinin, etc., according to the needs of the case.

Individuals who are below par physically, whether from wrong living or some debilitating illness or some actual physical defect, are liable to be nervous and intolerant when brought face to face with any stress or strain, and the same condition which is a cause of this may readily be a factor in the occurrence of uterine inertia. Such a person stands the nagging and delay of a sluggish uterus very badly, and will often have exceed-

ingly poor contractions of the uterus, but will make a great demonstration, demanding that something be done at once to relieve her, regardless of the consequences. She will be utterly unreasonable and hysterical, so that her family soon joins in her importuning. This very thing makes inertia a serious complication unless the attending physician is absolutely sure of his ground, and after taking matters into his own hands in a decisive fashion, refuses to be led into any such procedure as rupturing the membranes and applying forceps through an incompletely dilated cervix in an ill-advised attempt to clear the atmosphere.

The unfavorable effects of inertia which may supervene in the first stage, even though the membranes are unruptured, are protraction of this stage of labor with exhaustion of the patient from prolonged though not necessarily excessive pain, loss of sleep with its tendency toward lowering the resistance against puerperal psychosis, and possibly even fetal distress.

In case the membranes are ruptured, however, a condition exists which may readily become most serious. So-called dry labors are known even to the laity as difficult and likely to be troublesome.

In my series of seventy-six cases, twenty-one, or 26 per cent., seemed to be due to the fact that the membranes had ruptured before the labor pains began, thus inducing the labor before the muscle of the uterus was especially irritable and prepared to contract vigorously. It is true that such labors may be protracted by the lack of the hydrostatic action on the cervix of an intact amniotic sack, but these cases have been classified under the heading of inertia, not on a time basis, but rather by the character of the pains themselves. In addition to this, it will be remembered that many patients with early rupture of the membranes have strong labor pains and fairly rapid deliveries, and again that inertia often occurs with unruptured membranes, so that I still contend that inertia is a distinct condition in itself.

There is great likelihood that interference will become imperative when the membranes have been ruptured for some time, on account of elevation of the temperature or pulse rate of the mother, or such signs of fetal distress as a rapid, or irregular, or very slow fetal heartbeat, with or without the passage of meconium, as the case may be. This necessity for active interference is to be feared because it involves the whole question of cervical incision and laceration, damaging pressure from forceps, postpartum hemorrhage and the liability to infection from the extensive manipulations necessary at a time when there is lowered resistance.

If a patient can be carried on into the second stage of labor, whether the membranes be ruptured or not, untoward symptoms may be met with comparative ease, but the protraction of labor may have been such a temptation to make frequent vaginal examinations that the patient may have been dangerously exposed to this source of infection, though everything else was favorable. Rectal instead of vaginal examination of the patient is especially to be recommended in cases of inertia.

Early forceps delivery may be advisable even though serious symptoms have not appeared, since it is proper to assume that an inertia of the first stage predicates a similar condition in the second stage. In the meantime, the patient may have become so tired from prolongation of the first stage that she will not be able to bring her abdominal muscles into play for the expulsive effort required in this stage.

An analysis of the cases with which I have had to deal shows several interesting features. Twenty-one, or 27.6 per cent., of my cases of inertia followed rupture of the membranes before labor began, while in three cases, the membranes ruptured within a short time after the beginning of the pains. Inertia occurred in three patients whom I observed in their first delivery and again in their second. The oldest primiparas were 39 years of age and the youngest 19 years, while the average age in primiparas was 27.9 years. The oldest multipara was 42, the youngest 20, and the average age in this class was 31 years. There was one primiparous woman under 20; there were thirty-one between 20 and 30, and sixteen past 30 years of age; there were seven multiparas between 20 and 30, and eight past 30, one being 42 years old. A total of fifty-eight were primiparous and seventeen were multiparous while the parity of one is not recorded. Of the multiparas, nine were in their second labor, one in the third, two in the fourth, two in the sixth, one in the seventh, one in the eighth, and one in the eleventh.

The era of the morphin-scopolamin or "twilight sleep," was rich in cases of inertia, although I can give no exact figures on this, the reason being that in some of the cases, the administration of morphin and scopolamin for the purpose of obtaining the condition of "twilight sleep" apparently resulted in inertia, while in many cases these drugs were given for their narcotic effect when inertia existed and sleep was necessary. My records are therefore incomplete in this respect.

INTERFERENCE IN THE FIRST AND SECOND STAGES

Twelve cases required interference in the first stage of labor, while forty-one cases went into the second stage before it became necessary to end the labor operatively, and twenty-three patients delivered themselves spontaneously, a percentage of 15.7, 53.9, and 30.2 respectively. The longest first stage of labor in a primipara was 174 hours, the shortest seven hours and the average time was 38.3 hours, while among multiparas, the longest first stage was ninety-six hours, the shortest, eight hours, and the average, 34.3 hours.

So far as the second stage is concerned, it is difficult to give comparative figures because certain of the patients had practically no second stage, interference having been undertaken in the first stage or at the outset of the second stage. The longest second stage was eight and one-half hours in a primipara and four and one-half hours in a multipara. To state that a patient was allowed to continue eight and one-half hours in the second stage may seem surprising until it is explained that there was some progress, although slow, throughout this time and no untoward symptoms developed, while at the same time the patient was being sharply watched.

Interference during the first stage consisted in Dührssen's multiple incisions of the cervix, followed by forceps delivery eight times, vaginal cesarean section once, version of Braxton Hicks later completed by extraction once, craniotomy on a dead child once, and the introduction of a bougie once.

It will be noted that abdominal cesarean section has not been found necessary, and indeed is not considered safe after the patient has been long in labor, especially

if the membranes are ruptured, unless the extraperitoneal type is used. I have not used the cervical bags in any of these cases, but I am convinced, after making this review, that there are times when they might be of great value, although when interference becomes necessary it is usually urgent. Forceps were required in the second stage forty-one times, and sixteen out of all patients, or 21 per cent., developed postpartum hemorrhage of more or less serious degree.

Interference became necessary six times in the first stage and twice in the second, on account of exhaustion of the mother as evidenced by a rise in pulse to 110 or more and a temperature of 100.5 or more, and once in the first stage on account of a mitral stenosis combined with evidence of distress on the part of the infant. It was undertaken twice in the first stage and ten times in the second stage for fetal distress. In the second stage, interference was necessary seventeen times on account of undue prolongation of the stage without progress, twice because of posterior occipital positions, and twice for heart lesions of the mother.

There were no maternal deaths, but five infants were born dead or so deeply asphyxiated that they could not be resuscitated. One of these dead infants was macerated. Two babies died within the first few days of life with symptoms of intracranial hemorrhage.

CAUSES OF INERTIA IN VARIOUS CASES

The inertia was apparently due to premature or early rupture of the membranes in twenty-four cases, to artificial induction of labor in two cases, to physical debility from heart lesions in two cases, to syphilis in one and to tuberculosis in one case. A twin pregnancy was responsible once, while multiparity seemed to be the factor in a few indefinite cases. Four cases exhibited occipitoposterior positions of the head.

The morbidity of these cases has not been worked out, but seven patients showed a seriously febrile puerperium although all recovered. In one case of this group, the patient had been examined innumerable times by a midwife and another case followed several attempts at forceps delivery outside the hospital. One case followed a manual removal of the placenta for hemorrhage in the third stage.

Puerperal psychosis occurred in two patients with subsequent recovery in both instances.

In six cases there was retention of the placenta, three of these being due to an hour-glass contraction of the uterus, of which latter condition one case followed a dose of pituitary extract in second stage.

DANGER OF PITUITARY SOLUTION

Incidentally it might be said that I find very little use in my work for pituitary solution during any stage of labor. Needless to say, it has no place in the first stage, and after having three cases of hour-glass contraction of the uterus with retained placenta as a result of its administration in the second stage, I found that its safest period of use is after the expulsion of the placenta for the purpose of controlling uterine relaxation and hemorrhage. In this respect, it may be compared to ergot, which formerly enjoyed great popularity in the first and second stages of labor and finally came to be used only after the placental stage. Midwives continued to use it until they found that they had a more powerful agent in pituitary solution and now no self-respecting midwife would be without it, while ergot is almost forgotten.

CONCLUSIONS

1. The distinction between uterine inertia and uterine exhaustion is sharp, since the contractions of the uterus in the former condition are inherently ineffective while in the latter condition their force has been spent against some obstacle.

2. According to this distinction, based on etiology, it is incorrect to call the former condition primary inertia and the latter secondary inertia.

3. Differentiation between inertia and exhaustion is important from the standpoint of treatment, that of the former being more or less expectant while that of the latter should be prophylactic and directed against the obstacle to delivery.

4. True inertia begins in the first stage of labor. If the membranes are unruptured, the treatment consists in the use of mild uterine stimulants alternating with periods of rest induced by narcotics, until the second stage is reached, when active interference may be undertaken if necessary. If the membranes are ruptured, interference may become imperative on account of elevation of temperature, or pulse of the mother, or alarming changes in the fetal heart rate. This interference includes Dührssen's multiple incisions of the cervix and vaginal cesarean section, both followed by forceps delivery, or the use of cervical bags.

5. Interference in second stage is not as serious as in first stage and consists principally in delivery by forceps.

6. Frequent vaginal examinations are to be avoided and rectal examinations should be their substitute.

7. Premature rupture of the amniotic sack is a common cause of inertia in a patient otherwise well and strong, whereas constitutional defects, overdistention of the uterus by twins, hydramnios and frequent pregnancies are also important etiologic factors in producing this condition.

8. Retention of the placenta with or without hour-glass contraction of the uterus is a common result of inertia extending into third stage, and hemorrhage is likely to occur during and after the placental stage.

ABSTRACT OF DISCUSSION

Dr. Rudolph W. Holmes, Chicago: I was going to take issue with Dr. Titus for not approving of the classification of primary and secondary inertia. Secondary inertia is unquestionably due to exhaustion. Primary is clearly founded on no anatomic fact; it may be due to faulty innervation. No man, so far as I know, has ever discovered whether the uterus is normally or abnormally innervated. The great fundamental factor is that primary inertia is extremely rare and that it is due to faulty innervation, and faulty musculature. It is not the fault of the uterus but of the contributive factors present; the inertia, so-called, is the effect, not the cause, of prolonged labor. The first consideration is malposition. Every textbook and every authority tells you that each and every one of the malpositions means that labor is ushered in with abnormally weak contractions. You see it so characteristically in the breech, transverse, brow, etc. The second consideration is the contracted and flat pelvis with faulty adaptability of the head or presenting part to the brim and the labor begins with violent pain. The third type concerns the soft parts. The fibers of the lower segment prolapse and cause abnormal contractions at the onset of labor. These three conditions mean that there is an interference with the girdle of contact, that the presenting part cannot come down. The result is that the contractions continue until they settle the presenting part and the irritability is aroused. A woman may go a week with such weak con-

tractions, when labor will be terminated suddenly. It is too often forgotten that the girdle of contact is the key to the situation. Rupture of the membrane before labor is of no consequence. The important element is the cause of the condition. The three important factors are, therefore, malposition, minor pelvic contraction, failure of adaptability of the presenting part to the brim. The weak contractions continue until irritability is aroused and labor is then rapid. Too often the obstetrician does not look at the case of inertia from the point of view of the real cause. In the case of minor pelvic contraction the woman who has weak contractions in the early part of labor should be allowed to rest and should be given bromids, if necessary. In time her uterus will be aroused into activity. Pituitary solution has no place in this stage of labor. Primary atony is of so little consequence that operative interference is rarely indicated. In secondary atony due to exhaustion or to obstruction cesarean section might have to be done.

DR. PAUL TITUS, Pittsburgh: I would simply emphasize the point that there is no distinction between primary and secondary inertia. All have seen cases starting off with good pains but developing into sluggishness due to exhaustion and not to an "inherent indisposition to exertion" or inertia The difference between these conditions is not of vital importance, except, as I wanted to bring out, that there is a difference in treatment depending on the underlying cause. If we consider malposition a cause of inertia as Dr. Holmes has suggested, why is not all inertia secondary? I do not agree with the idea that rupture of the membranes is always due to failure of engagement of the presenting part. Dr. Holmes has stated that labor was prolonged because the uterus was not ready. That is precisely the point I was driving at. In case of early rupture of the membranes the uterus is not ready, and as a result of this very fact that it was not ready when the labor was prematurely induced by rupture of the membranes, it exhibited an inertia.

TRAUMATIC LESION OF POSTERIOR ROOTS OF THE LUMBOSACRAL PLEXUS

REPORT OF CASE *

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Since the restoration of injured nerves is chiefly dependent on the seat of the lesion, I report this case in order to refresh our knowledge regarding the different locations in which these neurons are subject to injury and to record the rather unusual location of the lesion. While evulsion of the cervical roots is not uncommon, traumatic root lesions of the lumbosacral plexus, with the exception of the case reported by Chiray and Clarag,[1] have not, to my knowledge, appeared in the literature.

Recently the discussions of Dejerine and Sicard[2] concerning sciatica brought forth a crop of reports from various observers, pointing out that sciatica is a disease of the intradural or extradural portion of the lumbar and sacral roots. However, radicular inflammation and compressions must not be confused with trauma of the roots. Just as the injuries of the peripheral nerves do not form a part of the various forms of neuritis, so must traumatism of the roots be separated from all forms of radiculitis. In neuritis and radiculitis the degeneration is secondary to an inflammatory process, while in the section of a nerve or root the degeneration is primary, the spontaneous reunion of the divided nerve-ends being prevented by the mechanical obstruction of the subjacent tissue.

REPORT OF CASE

History.—K. K., a man, aged 47, came under my observation, Nov. 11, 1917, at the Central Free Dispensary of Rush Medical College. He was a Greek laborer, gave no history of a tainted heredity, was not an alcoholic, never had any serious ailment, and denied venereal infection.

For about a year and a half he had had pain of a continous character in the left hip, and for the past three months, in addition to the nagging ache, he had had exacerbations of intense neuralgic attacks over the left iliac region, accompanied by numbness in the lower extremity, which was most pronounced over its external surface.

He stated that he fell off a ladder, May 28, 1916, at a height of ten or twelve rounds, landing on the left side of the buttock and striking the cement floor with the left side of his back at the level of the sacrum, the lumbar region and the posterolateral side of the ilium. On regaining his senses he lay for a time helplessly on the floor suffering intense pain at the point of injury. He was confined to bed for three months and treated for fracture of the left hip. After he began to walk he had persistent pain in the left hip, and about five months later he was again taken to the hospital, operated on for hernia, and confined to bed for about six weeks. On his resuming the use of the limb, especially when walking or straining, the dull, nagging pain returned, which periodically forced him to rest completely for a couple of weeks at a time. Besides the continuous, dull ache there appeared at irregular intervals paroxysms of neuralgic pain which at times woke him at night from his sleep. Sept. 6, 1917, about sixteen months after the accident, he applied at Rush Medical College for treatment.

Examination.—On walking and standing, the patient favored the left limb and was limping with the toes directed outward. In a recumbent position he could not lie flat on his back longer than about a minute without experiencing marked pain on the left side of the back of the pelvis.

The lower part of the left gluteal region was slightly flatter than the right. Measurements did not elicit any palpable difference in the size of the two limbs. The movements of the toes, ankles, knees and hip were performed fairly well, but the general power of the limb was less than in the right extremity. No reaction to degeneration could be detected in any part of the limb. The reflexes were practically normal. The Lasègue sign was present, but the pain was chiefly at the hip. Pressure over the left side of the iliac crest gave intense pain, but no tenderness over the vertebrae.

The lateral surface of the extremity was completely anesthetic. The anesthetic area was limited above by the boundary line where the sensory distribution supplied by the twelfth dorsal and first lumbar roots meet, known as the Head sacrofemoral zone. Sensation to prick, temperature, touch, compass points and pressure was present, but in a diminished degree at the middle and inner part of the limb, at the inner two thirds of the gluteal region, and on the plantar and dorsal surfaces of the great toe, on the second toe and on the inner half of the middle toe and over the corresponding parts of the foot. The only parts in which the sensations were practically normal were around the anal region, scrotum and root of the penis.

The complete examination of the patient did not show any other clinical phenomena. The laboratory findings of the blood and spinal fluid were negative.

COMMENT

A review of this case presents some diagnostic difficulty. In the class of cases in which injury is the etiologic factor, traumatic neurosis is one of the affections that must always be taken into consideration in differential diagnosis. The extensive sensory disturbance, in contrast to the meagerness of muscular atrophy and paralysis, taints this case with this psychic

* Read before the Chicago Medical Society, March 27, 1918.
1. Chiray and Clarag: Rev. neurol., 1912, **20**, 296-298.
2. Dejerine and Sicard: Rev neurol, 1912, **20**, 288-295

disorder. However, the approximation of the anesthetic area to anatomic boundary lines, the persistent adherence of the sensory disturbance to the anatomic distribution (which was found on repeated control examinations), the absence of the psychogenic behavior and the subsequent onset of the neuralgic paroxysms, which must be interpreted as an expression of nerve irritation, removes this case from the neurosis class and places it in the category of traumatic nerve lesions.

In traumatic, as in other nerve lesions, the chief difficulty rests not in the detection of the lesion but in the determination of its seat. In order to locate the seat of lesions of the peripheral neurons, it is most essential to be familiar with the nervous distribution of radicular origin, in contradistinction to that originating in the plexus. Therefore, I will briefly review the nervous anatomy at issue. It will be recalled that the lumbosacral plexus is formed by the anterior primary divisions of the lumbar and sacral nerves. These, like the other spinal nerves, arise from the spinal cord by two roots—a dorsal and a ventral — which extend downward within the dural sac for quite a distance, forming the cauda equina, and then penetrate the membrane. Near the point of exit from the foramina the two roots unite and pass into the outer world as a mixed nerve, which latter then divides into the anterior and posterior primary division. It is important to remember that the posterior primary division does not enter into the formation of any of the plexuses, but extends adjacent to the vertebrae and supplies the skin and muscles of the back and gives sensation to the upper two thirds of the gluteal region. On the other hand, the anterior primary division of the lumbar and sacral nerves forms the lumbar, the sacral and the pudendal plexuses, and supplies the lower portion of the gluteal region and the lower extremities with motion and sensation.

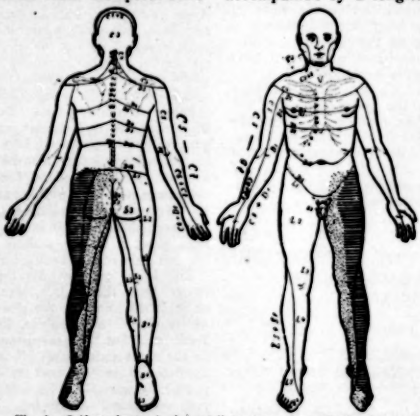

Fig. 1.—Seifert charts: horizontal lines, area of anesthesia; dots, area of hypesthesia.

Now, to utilize this anatomic architecture for localization of the lesion, it is best to divide the roots into three portions; (1) the intradural: the portion where the motor and sensory roots are still separated; (2) the extradural: the united portion of the anterior and posterior roots which extends from the distal end of the posterior ganglions to the point of divergence of these two primary branches, and (3) the truncal: the portion of the anterior division which extends from the point of separation of the ventral and dorsal division to the point of formation of the lumbosacral plexus.

It can readily be seen that this change in the anatomic construction presents different topographic outlines in the sensory and motor disturbances in each of these three portions. For instance, in lesions of the truncal portion there will be motor and sensory paralysis of muscles and skin innervated by the lumbosacral plexus, while in lesions of the extradural portion, the motor and sensory functions derived from the nerves of the posterior primary division will also be impaired or lost; and again, in tears of the intradural portion the sensation and motion may be affected independently of each other.

In the case before us the predominant feature is that of sensory disturbance. In order to avoid citation of extensive description of the well known sensory zones, I present here the Seifert charts, which show the sensory distribution of radicular origin, and the charts by Spaltholz, which define the boundaries of sensory disturbance in peripheral nerve lesions. On the Spaltholz charts it can be seen, for instance, in section of the lateral cutaneous branch of the first lumbar nerve that the band of anesthesia is limited to the lateral surface of the thigh, or to the hip alone if the iliohypogastric happens to be the injured nerve. On Seifert's charts the lesions of the first lumbar are accompanied by a longitudinal strip of anesthesia of the lateral surface of both hip and thigh extending up to Head's sacral-femoral zone. Again, in traumatism of the truncal portion of the sacral plexus, where the small sciatic is involved, the Spaltholz chart shows that only the lower half of the buttock presents sensory disturbance. On the other hand, Seifert's charts point out that in lesions of the roots forming the sacral plexus the upper half of the gluteal region will also be anesthetic. This will suffice to show that by listing the cutaneous areas disturbed in their sensation and then determining their nerve supply, a diagnosis can be arrived at with fair accuracy in the majority of cases.

Now to return to our case, we can readily exclude an injury to the nerves in their course along the extremity itself because this patient suffered no injury in any part of the limb; furthermore, because the predominant sensory disturbance extended over the whole extremity, and again, for the reason that the dissociation of the various modes of sensation, which characterizes peripheral nerve lesions, was absent. In injuries of the peripheral sensory nerves the disturbance of the epicritic sensations extends over a larger area than that of the protopathic sensations, and the deep sensation remains intact. In our case the deep sensation was impaired, and the epicritic and protopathic sensations overlapped each other.

Taking into consideration the site of the injury, one is led to localize the lesion in the lumbosacral plexus. But on applying the anatomic construction reviewed above, it is found that the disturbance of the nervous function in our case does not conform with such diagnosis. Traumatic plexus lesions are accompanied by a degenerative type of atrophy affecting definite muscles or groups of muscles. Our case presented no atrophy nor paralysis of any particular group of

muscles, nor any reaction to degeneration. The general weakness and the slight reduction in the circumference of the whole limb—a so-called atrophy en masse—was very likely due to disuse, since the patient suffered considerable pain and favored the affected left limb.

Again, the striking feature is that the lesion was practically limited to the sensory fibers, which is contrary to clinical experience in lesions of the plexus. For instance, one cannot picture an injury which would tear only the sensory and not the motor fibers of the great sciatic nerve at a point within the pelvis, where they still intermingle with the important motor fibers of the sciatic band. Again, the disturbance of sensation involves the upper half of the gluteal region, which, as the charts indicate, is supplied by the posterior primary division of the lumbar and sacral nerves.

These facts rule against a clean-cut injury of the lumbosacral plexus, and force the localization of the lesion in the intradural portion of the posterior roots. In this portion, called by Dejerine intradural murienne, in which the dorsal and ventral roots run to and from the spinal cord independently of each other, the functions of these two physiologically different roots usually become jointly affected; but it is possible that either the posterior or anterior root may be torn alone, leaving its associate partly or wholly intact.

To summarize, the area of anesthesia indicated by horizontal lines on Seifert's charts is supplied by posterior roots L 1, L 2, L 3, L 5 and S 1. These were probably completely torn at their entrance into the cord. The area of hypesthesia shown by dots on the same charts is supplied by posterior roots L 4, S 2, S 3, S 4 and S 5. Very likely these have been only partly injured. In the anal region the impairment of sensation was only very slight, so that S 4 and S 5 must have been practically normal.

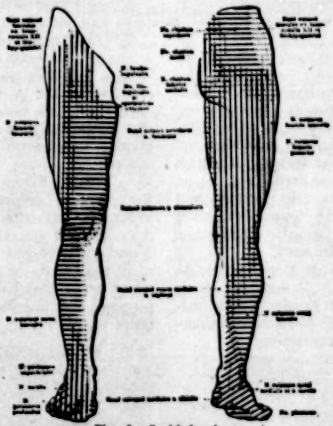

Fig. 2.—Spalthols charts.

In traumatic nerve lesions one should not base the diagnosis with absolute certainty on physiologic findings. This was forcibly pointed out by Frazier and Skillern,[3] who reported a case diagnosed by most competent men as a traumatic brachial plexus, which, on laminectomy, proved to be an intradural evulsion of the lower three cervical roots.

In intradural root tears the prospect of repair is hopeless. In our case, however, the diagnosis being at best hypothetic, it was thought that an exploration of the plexus together with a laminectomy at the lumbosacral region would bring to view the exact nature and location of the injury and possibly reveal reparable nerve bands, which on end-to-end suture or on autofascial tubulization might bring about regeneration of some of the nerves, saving the patient endless pain and restoring the limb to at least partially normal function. Unfortunately, the patient would not consent to further operative interference.

25 East Washington Street.

3. Frazier, C. H., and Skillern, P. G., Jr.: Supraclavicular Subcutaneous Lesions of the Brachial Plexus not Associated with Skeletal Injuries, THE JOURNAL A. M. A., Dec. 16, 1911, p. 1957.

Military Medicine and Surgery

CODING PHYSICAL EXAMINATIONS OF DRAFTED MEN FOR STATISTICS

METHOD USED BY THE SURGEON-GENERAL OF THE ARMY

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It is the purpose of this article to give the physicians making the examinations for the local boards an outline of how the work is accomplished and the difficulty encountered at times in interpreting the contents of the record.

As the work is of such magnitude, coming from all parts of the country and practically at some time or other, from every physician, uniformity in reporting the results of the physical examinations is impossible. Mistakes, such as occur in all statistical work of this kind, will occur; but the factor of error, compared with the total and general results attained, will be negligible.

When the work is completed, the Surgeon-General of the Army will have an invaluable collection of data, not only from the general military standpoint, but of value to every section of the country, from the largest city down to the smallest village. Realizing this, it has been the primary object of the department, of which Lieut.Col. Albert G. Love, M. C., N. A., is in charge, to attain a reliable result with the least possible error. The work, when finished, will be so complete that any local board in the country will be able to identify the men that were finally accepted or rejected for military service, and, if rejected, their names and the cause for their rejection. Statistics will be available from the tabulation of these examinations that could in no other way be compiled, and when the "reconstruction" takes place it will not only include the making over of those injured or disabled in fighting for their country, but also those who were rejected by the local or mobilization boards as physically unfit for military service.

Although the occupation of the drafted man is not coded at present, it will be done in the near future, and then the relationship of his occupation to any existing defect or disease can be determined. Statistics of occupational disease are very incomplete at present, for many men with a beginning or advanced disease resulting from their occupation pass unnoticed or away from previous medical observation.

The chief difficulty in coding the physical examinations of the drafted men has been the interpretation of vague diagnoses written on the selective draft forms by the examining physician, illegible writing, or an incomplete diagnosis or examination. In numerous

cases, symptoms are given when a diagnosis should be made. Frequently the local board fails to give its name or fails to designate the state in which it is located. Since "Form 1010, P. M. G. O." has been used for the physical examinations, better and more complete reports have been received.

After the reports of the draft examinations had been secured, the greatest difficulty encountered was

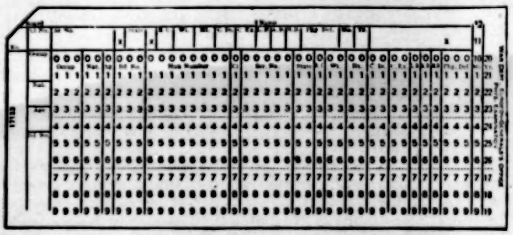

Fig. 1.—Statistical card: Code numbers corresponding to diseases and physical defects are written in the blank spaces at the top and left border. Each space has a corresponding column or group of columns of figures from 0 to 9, which are punched out according to the code numbers, so that the card may be used in the sorting and tabulating machine.

the preparation of the data for statistics. Tabulation by hand of several millions of records would be too laborious, slow and more or less inaccurate. This difficulty was solved by the adoption of a method of mechanical tabulation, the essential feature of which consists in the transfer to a special card (Fig. 1) of the recorded data, first by written code numbers and later by means of punch holes. The punch holes are always located with a definite relation to each other and to the general dimensions of the card.

The card used for this work is of a special design and measures 7⅜ by 3¼ inches. It contains blank spaces at the top and along the left border for recording all the data that pertain to the physical examination of the drafted men. The remaining part is divided into columns containing numerals ranging in series from 0 to 9. The numerals are of sufficient number in each column to correspond with any code number that is possible to appear in its corresponding space above and along the left border of the card.

After the data are written in code on the cards, these are placed into key punch machines (Fig. 2) and the figures punched according to the data recorded. This machine is operated similarly to a typewriter, with only twelve keys, and prepares the cards for the sorting and tabulating machines by means of punch holes. This work is done by girls, especially skilled as punch operators. An average operator is able to punch from 1,800 to 2,200 cards a day. Each card is verified after being punched to discover any mistakes that have been made in the punching. These perforated cards form the basis of all future analysis of the information that the cards carry.

They are next run through electric sorting machines (Fig. 3), the sort being made by a needle which is set, according to the type of sort desired, to come in contact with the perforations of any single column of figures. Only one item can be sorted at a time. As the sorting takes place the cards are carried by a card-conveying belt and deposited into boxes, from which the cards are removed by hand. This machine sorts at the speed of 250 cards a minute with absolute accuracy.

The sorted cards are finally run through electric tabulating machines (Fig. 4) for separate counting of any item or set of items of information concerning the physical examination of the men drafted for military service. This machine counts the cards at the rate of 150 a minute and permits the totaling of from two to five independent sets of data at one time.

CODE BOOK

Work was started on the selective draft examinations, March 26, 1918, and as the same clerks are used who code the "sick and wounded" reports of the Army, little instruction was necessary for them except in a general way regarding the various diseases and malformations that were to be regarded as defects, and the relative order of their importance. A code book containing a list of the common diseases and defects of the body was compiled in the latter part of 1917 by a committee of specialists in the various branches of medicine and surgery. This book, compiled especially for coding the "sick and wounded" reports of the Army, is also used, with a few additions, for this work. There are more than 900 diseases and defects listed, each having a seperate code number. As the physical defect space on the punch card provides for only three numbers, the list of diseases and defects must necessarily be less than 1,000, or 999. Numbers between 932 and 999 were reserved for allotment to diseases or defects not found in the list. Only when an unlisted disease or defect appeared in the physical examination and was thought to be of importance and likely to appear frequently in future examinations was it given a number and added to the code book.

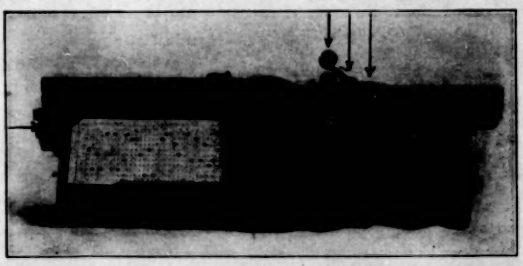

Fig. 2.—Key punch machine: The card is inserted into the carrying arm of the machine (indicated by arrow at left). The punch operator uses the keyboard (indicated by arrows at top), reading the code numbers from the left border and top of the card while she punches. As each figure is punched, the machine automatically carries the card to the left and in position for punching the succeeding figures.

DATA RECORDED

At the top and to the left of the card (Figs. 5 and 6) the name of the local board is written, and to the right the man's name. At present the name is written only when the man is rejected as physically unfit for service. Along the left border of the card is written

the identification number that he received on arriving at the camp, and also there are spaces for the code number of his occupation, nativity, age and board number. Information for these spaces will be requested on the new physical examination form now being prepared by the Provost Marshal-General. On the second line to the left is a space for the class number, next the serial number followed by a space for the code number of the state in which the local board is located. The following space, or "R. C.," is for the code number which designates whether the local board is a rural district (small town) or a city. As a working rule, local boards are considered to be a city when followed by a division number such as Springfield, Mass., No. 3; Rochester, N. Y., No. 1; Meriden, Conn., No. 5; Chicago, No. 44; Pittsburgh, No. 17, etc. If not followed by a number, it is considered to be a small town or a country district, such as Fairfield, N. C.; Dyersburg, Tenn.; Lewisburg, W. Va.; Morristown, Pa.; Smithport, Pa., etc. The next four spaces are for the weight, height, chest inspiration and expiration. No code numbers are used for these, but the data are inserted in the spaces as recorded on the examination forms. As practically all of the men of the present draft age are between 100 and 200 pounds in weight, only the last two figures are used; thus, for a man weighing 175 pounds, only the 75 is recorded. If he weighs less than a hundred pounds, then "R" is placed in front of the figures; thus, a man weighing 95 pounds would be coded as R 95.

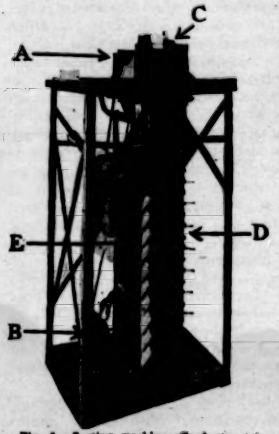

Fig. 3.—Sorting machine: Cards are set on the metal platform (*A*); the motor (*B*) causes the cards to be automatically fed into the machine by a "feeder" (*C*). As the punch holes of a single column of figures come in contact with an electric needle, the cards are sorted and carried by a card-conveying belt (*D*) into the collecting boxes (*E*). Each box is numbered to correspond with the series of figures that appear on the punch card.

Later when the card is sent to the punch room the "R" space on the card (not shown) would be punched as well as the numbers. If he weighs 200 pounds or over, then "X" is placed in front of the figures; thus 215 pounds would be coded X 15. The punching of the card would be the same as was described before except that X would be punched in place of the R.

In height, weight and chest measurements where the fraction is less than one-half inch or pound, only the whole number is coded; when the fraction is one-half or more the next whole number is used. Owing to a typographical error on the punch card, the chest inspiration and expiration spaces are reversed from the order with which they appear on the physical examination form. This arrangement, however, is disregarded, and the data are inserted as they appear on the form.

In recording physical defect, the major or most important defect or disease said to exist by the mobilization board is taken; if the man is not examined by the mobilization board, the major defect or disease that is said to exist by the advisory board is taken. If the man is examined only by the local board, then the data are taken from their examination.

In order to show on the punch card whether the man has been accepted or rejected by the local, advisory and mobilization boards, the following classification is used, each having a single code number: accepted with defect for operation; recommend acceptance with defect for operation; man not examined; physically qualified with one defect; physically qualified with two defects; physically qualified for special or limited service with one defect; physically qualified for special or limited service with two defects; physically qualified for special or limited service with three defects; physically disqualified with one defect; physically disqualified with two defects; physically disqualified with three defects.

When a man is accepted for service with no defect, "X" is used in the physical defect space. If he has a disease or defect, the code number corresponding to that disease or defect is used in place of the "X." When more than one defect is present, all are counted, but only the major or more important one is coded. The defects and diseases most commonly found in the physical examination of the men have been arranged in their order of importance from a military standpoint. Hernia, which is considered an absolute cause for rejection, or for "acceptance with defect for operation," has been placed at the top of the list. Next in order of importance have been placed syphilis, gonorrhea, valvular heart disease, tuberculosis, all degrees of flatfoot, defective vision, defective hearing, defective teeth, overweight, underweight, malunion of fracture, loss of one or more fingers, etc. The foregoing

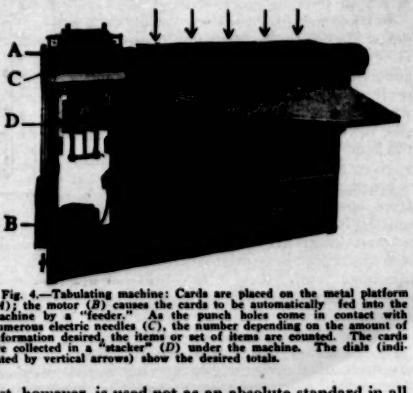

Fig. 4.—Tabulating machine: Cards are placed on the metal platform (*A*); the motor (*B*) causes the cards to be automatically fed into the machine by a "feeder." As the punch holes come in contact with numerous electric needles (*C*), the number depending on the amount of information desired, the items or set of items are counted. The cards are collected in a "stacker" (*D*) under the machine. The dials (indicated by vertical arrows) show the desired totals.

list, however, is used not as an absolute standard in all cases, but only as a general working outline.

When determining the major defect, among defects stated, their severity and the effect military service would have on them are taken into consideration. In the case of a man with first degree flatfoot with no symptoms and marked defective vision, the preference

would be given to the defect of vision; but if he had third degree flatfoot, with or without symptoms, and vision of 20/40 or 20/70, then the flatfoot would be considered the major defect.

In the general examination of the body, scars of the head and face are coded as a defect only when "extensive," "painful" or "with marked cicatricial contraction." A man giving a "history of a fractured skull" would not be considered as having a defect unless it was stated on the examination report to be a "depressed fracture" or one with symptoms of "convulsions," "mental deteriorations," etc.

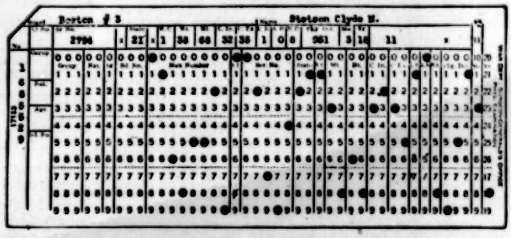

Fig. 5.—Interpretation of the statistical card: The man is from Boston, Board 3. His name is Clyde M. Stetson, his serial number 2794 and his identification number 1685529. Boston is in (21) Massachusetts and is (1) a city. His weight is 138 pounds, height 68 inches, chest inspiration 35 inches, and chest expiration 32. The local board (1) "accepted him for military service with no defect"; he was (O) "not examined" by the advisory board, while the mobilization board (8) "rejected him with two defects," the major one being defective teeth. He was examined in March, 1918. His physical examination report was coded by Clerk 11.

Goiter, except exophthalmic goiter, is considered a minor defect.

The various deformities of the chest, as "funnel," "asymmetry," "pigeon," "flat" or similar terms, are not coded as defects unless the degree of deformity is stated to be "marked," "severe" or of such a degree as to interfere with standing erect, drilling, etc.

Relaxed inguinal rings are considered a defect; but when associated with such defects as syphilis, flatfoot, tuberculosis, gonorrhea or valvular heart disease, the preference is given to the latter defects; when associated with hypertrophied tonsils, varicose veins, various deformities of the hand or foot, etc., then the preference is given to the relaxed rings.

Scars of the abdomen and extremities from operations or burns are not coded unless "extensive," "painful" or "with marked cicatricial contraction." If an abdominal scar is associated with a "weak abdominal wall," then it is considered a defect. Curvature of the spine is considered only when "marked" or "severe." Ankylosis of the joints, either fibrous or bony, is always coded as a defect. Old fractures of the extremities are not coded unless a "deformity" is present from malunion, or "ankylosis," or "loss of motion" is said to exist. A finger amputated at the distal phalanx is not considered a defect. If amputated at the second phalanx or proximally, it is coded as the loss of a whole finger. Varicose veins are considered only when "marked" or "painful" or "with symptoms."

The common deformities of the nose, as a deviated septum, nasal spurs or hypertrophied turbinates, being common defects and ones that can in all probability be corrected, if necessary, are not considered for the statistics. Hypertrophied tonsils, because they play such an important part as a source of various infections of the body, are considered defects; but when associated with other defects, as varicocele, venereal disease or flatfoot, the latter are given the preference.

In coding defects of the heart, "functional," "systolic," "accidental" or "cardiorespiratory" murmurs are not considered. When a definite disease of the heart is said to exist, as mitral stenosis or regurgitation, aortic stenosis or regurgitation, or stated as "organic murmurs," it is coded as a defect and ranks next to hernia and venereal disease in order of importance. Cardiac hypertrophy or dilatation, whether slight or marked, is always considered a defect. Tachycardia is considered only when characterized as "constant," "persistent," or by any other term that shows it to be of a permanent character and not from nervousness as a result of the physical examination.

In considering defects of the lungs, "râles," "dulness over lungs," "bronchial breathing," "rough breathing," etc., are not taken as defects. If the man is rejected or discharged from the Army for any of these physical signs, it is considered a defect. If any of the physical signs are found to fit in with any previous illness or with other parts of the examination, such as underweight, poor physical development, persistent cough, hemotysis, etc., then the symptoms for which the man was rejected or discharged are coded as near as possible as a definite disease. Asthma, tuberculosis and similar diseases are always considered major defects.

Diseases of the genito-urinary organs, as syphilis and gonorrhea, are always considered major defects and rank next to hernia in order of importance. Varicocele is not considered a defect unless it is said to be "marked," "large" or "with symptoms." Hydrocele is

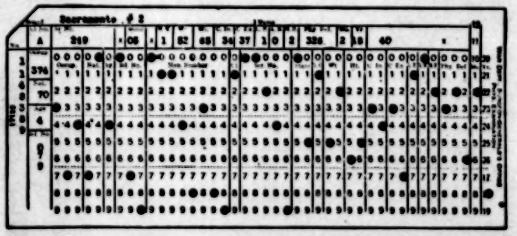

Fig. 6.—Interpretation of the statistical card containing the additional information that will be requested on the new physical examination form: The man is from Sacramento Board 2. His name is not written on the card as he was accepted for military service. He is in Class A, his serial number 249, and his identification number 1148389. His occupation is (374) bookkeeping; he was born in (70) England; his age is (4) 24, and the local board that examined him is No. 079. Sacramento is in (05) California, and is (1) a city. His weight is 152 pounds, height 65 inches, chest inspiration 37 inches and chest expiration 34. The local board (1) "accepted him for military service with no defect"; he was (0) "not examined" by the advisory board, while the mobilization board (2) "accepted him with one defect," the defect being (326) gonorrhea. He was examined in February, 1918. His physical examination report was coded by Clerk 40.

always coded as a defect. Atrophy of the testicle is not considered, but defects such as monorchism, cryptorchidism or hypospadias are always coded.

Hemorrhoids are considered only when "external," "large," "bleeding" or "painful." Small epithelial or skin tabs are not coded. Fistula in ano is always a defect.

All degrees of flatfoot are coded as defects. Hallux valgus is considered a defect, but overriding toes are not unless they are of such severity as to be a cause for rejection, and pronated feet only when "marked" or "severe." Weak, flaccid and spastic feet or similar conditions of the feet whose function can be restored by treatment are not considered.

The next two spaces on the card are for the month and year of the examination, no code number being used; but the number of the month and the last two figures of the year are written in their respective spaces. The last space on the card is for the code number of the clerk who transfers the information from the physical examination form to the card.

VALUE OF THE NEURO-OTOLOGIC TESTS IN THE ARMY FROM A DIAGNOSTIC STANDPOINT

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A great deal of literature has appeared concerning the Bárány tests in the examination of aviators, while very little has been said about their value in other departments of Army medical work. Perhaps the main reason for this is the newness of the subject and the requirement of a greater knowledge of neurology than is usually considered necessary in otologic practice.

However this may be, there are many borderline cases among the men already in the service to whom the tests and a correct interpretation of them are highly applicable if we maintain the same standard for ear work that we have established for the other branches of medicine.

In the Army, all cases of visual disturbance are carefully investigated by the ophthalmologist, and every case of deafness is referred to the otologist; but when it comes to disturbance of the vestibular apparatus, it does not seem to be so well known that vertigo comes purely from some interference with a special sense organ governing the manifestation of dizziness, and that a careful examination is often necessary in order to determine the source of the trouble.

Owing to the anatomic relation of the vestibular end-organ to the organ of hearing in the labyrinth, and the common nerve trunk for the two senses, as well as a close central relation, the otologist falls heir to the newly acquired methods of examination. Consequently he must be able to interpret (or help interpret) the variations. Here cooperation of the otologist and neurologist will almost invariably lead to a correct diagnosis; at least they can determine whether the trouble is functional or organic. The soldier who complains of dizziness or of dizzy spells is entitled to just as much consideration as the one who complains of poor vision or deafness.

Many theretofore unrecognized cases of vestibular disease have been observed in the cantonments by those familiar with the symptoms. Some of these men have been treated for chronic stomach disease, nervousness and various other troubles. Some are kept for weeks under observation, while others are classed as malingerers or hysteriacs. The majority of them are absolutely useless as soldiers, they cannot train well, and when most needed they will be unable to carry out their part. Yet not all men troubled with dizziness necessarily have vestibular disease. However, the significance of the symptom is so marked that one should never overlook the possibility of a lesion in the structures constituting the vestibular apparatus.

The peripheral nerve ending may be involved by any disease common to the middle and internal ear. The nerve trunk is subject to various disturbances, and, when we consider the extensive ramification of the vestibular fibers in the spinal cord, the medulla, the cerebellum and the cerebral cortex, as well as the vestibular relation to all the cranial nerve nuclei, we can appreciate the opportunities for intracranial involvement. Some one has well said, "The vestibular apparatus is the brain sentinel."

Through the various connections with the cranial nerve nuclei, reflex irritation may occur and produce dizziness, as is frequently encountered in refraction work, nasal examinations, acute indigestion, etc.; while toxemia from any source, as chronic indigestion, chemical absorption, infections and constitutional diseases, may account for other cases. Here the prognosis depends on eliminating the cause of the irritation.

I shall not attempt to discuss the tests in this article; they are comprehensive, practical and an invaluable aid to neuro-otologic diagnosis. The excellent work by the Philadelphia school along this line cannot be too highly commended. The article by Isaac H. Jones[1] should be read carefully by all who do not appreciate the importance of the vestibular manifestations in the practice of medicine.

The value of the neuro-otologic tests in making the diagnosis of multiple sclerosis of the cerebellar type is illustrated by the case of a soldier who was under observation in one of the cantonments for several weeks.

C. D. P., aged 24, stenographer, referred for examination of the vestibular apparatus, for six years prior to enlistment had been treated for stomach trouble and had had an operation for appendicitis without relief.

Auditory findings were absolutely normal.

Vestibular tests revealed voluntary nystagmus when looking to either side and past pointing 4 inches above with the left finger horizontal test (shoulder). Romberg's sign was positive. Coordination was poor.

Turning tests revealed a poor grade of nystagmus and but little or no vertigo. There was no falling. There was no past pointing with the right hand. The patient past pointed 6 inches to the right with the left hand when turned to the right or left.

Caloric tests of the right ear revealed slight nystagmus from the vertical canal after one minute; no vertigo; a shade better nystagmus from the horizontal canal. Caloric tests of the left ear revealed no nystagmus nor vertigo from vertical canal after three minutes' irrigation; slight reaction from horizontal canal. There was no falling. The patient past pointed the same as in the turning test, namely, right hand, no past pointing; left hand, 6 inches to the right.

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1. Jones, I. H.: The Practical Uses of Recent Work on the Internal Ear, THE JOURNAL A. M. A., March 17, 1917, p. 829.

A peripheral lesion can be eliminated, as the nystagmus was fair from the horizontal canals, the left hand always past pointed to the right, and the auditory reactions were normal. The past pointing and falling reactions indicate a lesion at the crossing of the superior cerebellar peduncles and involvement of the left cerebellar cortex, while the nystagmus reveals a pons lesion involving the vertical canal fibers. All this suggests multiple foci.

On further investigation the patient gave a history of yellow fever at the age of 10, measles at 15, and typhoid at 16. At 18 he had left facial paralysis and difficulty in swallowing and breathing, with partial recovery. Later he had dizziness and stomach trouble, and was operated on for chronic appendicitis. Two years later he was able to resume his studies, but was not well. He is now unable to continue his work as a stenographer on account of dizziness and stomach trouble.

The patient was of fairly healthy appearance. There was an intention tremor of the hands, and weakness of the mimic muscles of the left side of the face. There was no plantar nor abdominal reflex. On the left shoulder and the abdomen there were semianesthetic spots. The patellar reflex was overactive; there was slight spasticity. The corneal reflex was subnormal. There was loss of taste over the left half and posterior right third of the tongue. The patient was very nervous.

All laboratory reports were negative, including roentgenoscopy after test meals.

The manifestations indicated a slowly progressive lesion of weak destructive quality, involving chiefly the region indicated by the Bárány tests. Careful consideration of a detailed history justified the diagnosis of multiple sclerosis.

CONCLUSIONS

1. A more general use of the tests is indicated when dizziness is encountered.
2. A closer cooperation of the otologist with the neurologist is necessary in this work.

TREATMENT OF FACIAL ERYSIPELAS AT CAMP CODY, N. M.

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Between Nov. 6, 1917, and May 15, 1918, 104 cases of erysipelas were treated at the base hospital at Camp Cody. Most of these began on the face. The disease followed drainage of the mastoid in seven cases, abscess of the scalp in three cases, demonstrable ulcer in the nose in three cases, hordeolum in one case, and burns of the face in one case. The remaining ninety cases were called "idiopathic." On certain occasions an influx of such cases was noted after a period of high winds and dust storms, such as characterize this place and favor the development of inflammations of the mucous membranes of the head generally.

Although only one patient died as the result of erysipleas, the disease was responsible for a total of 2,497 hospital days, making it a matter of some importance to determine the best method of management and establishing it as a routine.

TREATMENT

Most of the methods known to the profession have been tested, including a sensitized streptococcus vaccine prepared here from the mastoid cases by Captain Lamb, chief of the laboratory service. Until about March 1, 1918, none of the methods tried showed any marked superiority over certain others; but at this time, Lieutenant Avata began a systematic employment of the method of collodion circumscription, first described in 1892 by Niehans. The results have been striking. Before March 1, the cases treated by all other methods averaged 8.1 days of fever and 30.4 days in hospital. (The patients were discharged when redness, swelling and desquamation were all gone.) All patients treated after March 1 by collodion circumscription averaged 3.5 days of fever and 15 days in hospital, a cut of 50 per cent. in the number of days spent in hospital by the average case of erysipelas.

Fig. 1.—Erysipelas beginning about the right eye. The disease having extended to the bridge of the nose, the collodion line is made to include the nose and both eyes.

Fig. 2.—A case similar to that shown in Figure 1, front view.

The method is not a new one, but it would appear that it is not so commonly used as it might be to advantage, and that frequently it is not carried out in such a way as to give the full results of which it is capable. The following details of the method as used at Camp Cody, by Lieutenant Avata, are, therefore, recorded.

Collodion, U. S. P. (nonflexible), is painted with a cotton swab or brush to form a stripe half an inch wide and from half an inch to an inch in advance of the line of induration, in such a way that the diseased area is completely circumscribed. The collodion stripe is painted over repeatedly until, when dry, it makes a deeply constricted furrow not broken or imperfect at any point. On the following days the collodion line is inspected for breaks, cracks or inadequate constriction at any point; if found, these are repaired by further coats of collodion. When enough collodion is used to produce a continuous and sufficiently deep (from half to three quarters of an inch) linear constriction of the skin, the erysipelatous induration advances to the collodion, but not beyond it. The collodion is left in place until the temperature and swelling have wholly subsided. If there is a break in the collodion line or if the skin constriction is too shallow, the disease may pass through or under it. Presumably a successful result depends on a complete constriction of the lymphatics of the skin through which the infection travels.

Some ingenuity may be exercised in laying out the line on which the collodion is applied when dealing with erysipelas involving different parts and expanses of the face, head, neck, etc. In cases beginning about the ear it has been found feasible to clip the hair

and encircle the ear; with unilateral involvements of the cheek or face which have already approached one eye but have not involved the nose, the line may be drawn up the nose between the eyes and around the lesion, leaving one eye within the circumscribed area, but saving the other, etc., as in the accompanying illustrations.

Within the circumscribed area the inflamed skin swells intensely, at first appearances more intensely than in noncircumscribed cases; but this is mainly an appearance due to the contrast between the swollen area and the line of depression caused by the collodion, as may be noted in the illustrations. Patients have not complained more of discomfort or the sensation of tightness, when so treated, than those not circumscribed. On the contrary, the control patients complained that they were not given the benefit of circumscription. The latter do not become so toxic as those in which the disease is permitted to involve wide areas of skin (Table 2).

TABLE 1.—COMPARATIVE RESULTS OF THE TREATMENT

Total cases from Nov. 6, 1917, to May 15, 1918..... 104
Cases treated by collodion circumscription..... 23
Cases treated by all other methods..... 81

	Collodion Cases	All Others
Average stay in hospital	15 days	30.4 days
Average febrile period	3.5 days	8.1 days
Average maximum temperature .....103 F.		104.5 F.
Incidence of complications	0.0 per cent.	15.3 per cent.

The collodion treatment is supplemented by the continuous application of cold compresses wet with a saturated solution of magnesium sulphate and by general measures, such as are rational in any febrile condition.

RESULTS

Of the twenty-three erysipelas patients treated by collodion circumscription, all but one entered the hospital after Feb. 1, 1918, whereas most of the others

Fig. 3.—Circumaural erysipelas; intense swelling, stopping abruptly at collodion line.

Fig. 4.—Method of sparing one eye when the disease has not yet involved the bridge of the nose.

were admitted before that date and after Nov. 6, 1917. The question could be raised, therefore, as to whether the marked improvement in results was influenced by other factors besides the treatment, as for instance, a natural decline in the virulence of the infecting organism, an increased resistance on the part of the seasoned troops, differing practices with reference to the date of release, etc. After the middle of April, to control this point, circumscription was employed only in alternate cases, while the controls were treated simply with cold compresses of saturated magnesium sulphate solution. The results are given in Table 2.

TABLE 2.—RESULTS IN FOUR CASES TREATED WITH AND FOUR WITHOUT COLLODION CIRCUMSCRIPTION

	Case No.	In Hospital, Days.	Febrile, Days.	Highest Temperature.	Highest White Blood Count.	Complications.
Circumscription Cases.	1	12	3	102.0		None
	2	20	3	104.4		None
	3	21	5	101.4	16,000	None
	4	22	2	99.4	8,000	None
	Average	18.75	3.25	101.8	12,000	None
Controls	1	33	7	104.6	.....	Abscess
	2	34	8	104.0	.....	Abscess
	3	16*	11	104.0	23,000	None
	4	22	14	105.4	22,000	None
	Average	26.25	10	104.5	22,500	40%

*This patient had erysipelas six days before admission to the hospital.

CONCLUSION

The method of treating erysipelas by collodion circumscription as described above has led to a marked reduction in the time spent in hospital by such patients. It also markedly shortens the length and the height of the fever curve, lessens the toxic symptoms generally, and in facial erysipelas reduces the frequency of abscess formation almost to nothing, since abscess seldom occurs with erysipelas confined to the face. No comparable results having been obtained by any other method, the collodion circumscription method has been established as a routine.

OCULOMOTOR REACTION TO LABYRINTH STIMULATION

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The testing of thousands of young men for the aviation service will give a wonderful stimulus and interest to the question of the physiology of the semicircular canals and their reactions. In the consideration of this subject there is one method of approach which has not been used, and yet which seems to me to present a promising field for investigation. I mean a consideration in a more careful way of the actual anatomic position of the canals, and their physiologic relations to the movements of the head on the body. A comparison of these planes and directions, as well as of the motion of the head with the different conjugate movements of the eyes, is also interesting. To simplify matters, this subject should be considered mainly with the position of the body vertical and immobile.

The movements of the head and eyes and the position of the canals will be considered in three planes, horizontal, longitudinal and transverse. The last two positions, that is, the longitudinal and the transverse, are generally termed in anatomic descriptions of the skull as sagittal and frontal, but I have chosen longitudinal and transverse as being more descriptive of these positions and directions of movement. These positions can be better understood if the skull is considered in the status of the living subject standing upright, with the head erect. An exact vertical anterior posterior median section of the skull would now represent a basic longitudinal plane and any longitudinal plane would be a plane parallel to this section. The term sagittal is used by anatomists instead of the term longitudinal for this direction.

A vertical section made across the skull at right angles to the foregoing would form the basic direction for transverse planes and any plane parallel to such

section would be a transverse plane. This direction is called by the anatomists frontal.

A horizontal section at right angles to both the foregoing would represent the basis for the horizontal direction and any plane parallel to this would be horizontal. This direction is also termed horizontal by the anatomists.

A consideration of the movements of the head in these three different directions will now be made. A movement of the head in a longitudinal (sagittal) plane is a nodding movement. So also is a raising or lowering of the head, or a throwing it back. This will take place mainly by a rocking of the skull on the condyles of the occipital bone resting on the atlas, that is, at the occipito-atlas articulation, and the radius of action is around a pole passing through this articulation. A movement of the head in a transverse frontal plane is a wagging of the head from side to side. This includes the occipito-atlas, the atlas-axis, and the upper cervical articulations, and the radius of action is around a pole situated lower than the center of motion of the longitudinal movement. The horizontal movements are those of turning the face from one side to the other. These movements take place by the turning of the atlas around the odontoid process of the axis. The radius of action in these movements is around a pole which is represented by an extension upward of the odontoid process of the axis. It is interesting also to note that the radius of rotation for the horizontal and the longitudinal canals is about the same—that is, about 1½ inches—also that the center of rotation of the longitudinal (superior) canals is higher than the center of rotation of the transverse (inferior) canals.

MOVEMENTS OF THE EYES

A brief consideration of the mechanics of the motion of the eyes is necessary. No movement of the eyes is participated in by any two muscles alone. In other words, there is no single action of any muscle of the eyes without others also taking part in it. The simplest conjugate movement is that in a horizontal direction with the internus on one side and the externus on the other taking the principal part. At certain parts of this excursion, however, the superior and inferior recti play a prominent part. The raising of the eyes is not purely an action of the superior recti, but there is also a decided action of the inferior obliques. In the act of looking down, the inferior recti are aided by the superior obliques. Rotary movements are not accomplished by concomitant action of the muscles in the obliques only, but aid is given by the recti. Motion of the eyes calls for a constant state of tonic contraction of all the ocular muscles. This tight rein produces the absolutely smooth and well regulated movement of the eyes. This smooth transfer of power from one direction to another is, perhaps, aided by the fact that the axis of the two orbits are not parallel and that no muscle acts alone for any one direction of movement.

The movements of the eyes then in a longitudinal (sagittal) plane are represented by a raising and lowering of the eyes, and the muscles mainly involved are the superior and inferior recti. The movements of the eyes in a transverse frontal plane are torsion of the eyes, and the muscles mainly involved are the obliques. The movements of the eyes in a horizontal plane are the turning of the eyes to right or left and the muscles mainly used are the internal and external recti.

At this point it is desirable to consider nystagmus in its relation to the conjugate movements of the eyes mentioned in the foregoing. Nystagmus due to cerebellar or internal ear origin used to be called conjugate deviation and is a conjugate movement of the eyes. Horizontal nystagmus is carried on by the internal and external recti, vertical nystagmus mainly by the superior and inferior recti and rotary nystagmus by the obliques.

POSITION OF THE CANALS

The position of the canals will bear careful study and the proper placing is absolutely essential if the reflexes resulting from their stimulation are to be intelligently interpreted. A study of the canals will show that while none of them lie in the exact direction of the planes of the skull, they may each be said to lie nearly in one particular plane. There is no difficulty about the horizontal canals though they are not absolutely in a horizontal plane and the head must be inclined forward from 20 to 30 degrees before they lie in a horizontal plane. The vertical canals, however, require more careful consideration and should be studied, when possible, with the temporal bone still attached to the skull and not disarticulated; however, if it is disarticulated, great care must be taken that it be held in its proper relative position to the rest of the skull. In studying a temporal bone, there is a uniform tendency to place the pars squamosa in a longitudinal plane, whereas it should be held at an angle of about 20 degrees with this plane. This change in the angle throws the posterior canal more nearly into a transverse plane. Again it is true, as Gray says, that the posterior vertical canal is parallel with the posterior surface of the temporal bone, but the portion of the posterior surface which is parallel to this canal is a facet which is several degrees more nearly in a transverse plane than the remainder of this surface. These two factors being taken into consideration, the posterior vertical canal, instead of being in a plane forming an angle of 45 degrees with a longitudinal plane, is found to be only about 25 degrees from being in a transverse plane and the anterior canal is about 25 degrees from being in a longitudinal plane. All the bones at my disposal, while limited in number, bear out these relative positions and I am sure they will be still further substantiated by the measurements of large collections.

From this study, therefore, the anterior vertical canal should be called the longitudinal (sagittal), but is called almost universally the frontal (transverse). The posterior vertical should be the transverse (frontal) but it is called almost universally the sagittal. The conception that the posterior canal on the one side is in a plane with the anterior canal on the other side (Crum Brown) is wrong and the arguments as to the action of the canals based on this premise must be wrong. The two posterior canals lie more nearly in transverse planes and the two anterior canals lie more nearly in longitudinal planes or nearly parallel. That they are not exactly in these planes is admitted. Neither are the horizontal canals in the horizontal plane, but they are sufficiently near so that they are the canals stimulated by rotation in a horizontal plane. So will the anterior canals be stimulated when the longitudinal planes are made horizontal. This cannot be done in the ordinary turning chair, as it is impossible to lay the head sufficiently over on the shoulder. The posterior canals may be placed horizontally or in

the plane of rotation either by placing the head down, as in the falling test of the aviation examination, or by throwing the head well back.

Neuman,[1] in his lectures in this country in 1910, in explaining the rotation tests, describes the two horizontal canals as acting simultaneously, and when the head is flexed either forward or backward, the two superior canals are acting simultaneously. He ignored the posterior canals, taking the ground that although they may be excited by rotation with the head down on either shoulder, it is impossible to determine from which ampulla the center is stimulated, as both are occupying the same relative position. It will be noticed he holds the vertical canals to be in opposite planes to the positions claimed in this paper. Bárány's mnemonic sign also does not give the true position of the canals. Furthermore, it is extremely difficult, if not impossible, to place the hands in the true planes of the canals.

Alexander[2] states:

> The semicircular canals, the ampulla and the nerve end places are named according to their position in the cranium. Thus, there are the frontal (anterior superior) the horizontal (medio external) and the sagittal (posterior inferior) canals.

Ballenger[3] quotes Flourens as follows:

> If turned while the head is inclined 90 degrees forward or backward, the anterior vertical pair of canals functionate, causing a rotary nystagmus.

On the other hand Gruber,[4] quoting Retzus, speaks of the anterior superior or sagittal and the posterior (frontal), but later he quotes Crum Brown:

> The plane of the anterior canal of one ear is almost parallel with the plane of the posterior canal of the other ear.

From the foregoing descriptions of the movements of the head, the conjugate ocular movements including nystagmus and the positions of the semicircular canals, we are in a position to correlate the three showing how all harmonize.

HARMONY OF THE VARIOUS MOVEMENTS

The horizontal movements of the eyes are those controlled by the internal and external recti, which, unlike the other extrinsic muscles of the eye, have in this plane an action less opposed and unhampered by the contraction or tone of the remaining ocular muscles. The horizontal canal is similarly unhampered. It has its independent opening into the utricle and is shorter and wider than the other canals. By far the greater movements of turning the head and body are in a horizontal plane and provision seems to be made that both the labyrinth and the ocular motor apparatus shall be least interfered with in this plane. The horizontal movements of the head, the horizontal canals, and the internal and external recti (horizontal nystagmus) therefore bear a close relationship.

The vertical movement of the head is in a longitudinal plane. The canals lying more nearly in this plane of motion are the anterior superior, which receive more direct action when the head is thrown backward or forward (nodding).

The vertical movement of the eyes is mainly the action of the superior and inferior recti. The corresponding motion of the head is nearly in the plane of the superior vertical canals and mainly stimulates these canals in a longitudinal plane. The vertical movements of the head (nodding), the superior canal and the superior and inferior recti (vertical nystagmus) therefore bear a close relationship.

The rotary movements of the eyes and rotary nystagmus are the result of mixed action, but mainly that of the obliques. The corresponding motion of the head is the movement from shoulder to shoulder or in the transverse plane, and placed most nearly in this plane are the posterior canals. The relationship of the posterior canals therefore is with the oblique muscles (rotary nystagmus) and with the movements of the head in a transverse plane.

The eye reactions to the turning tests bear out this conception of the planes of the canals and their relations to the movements of the ocular muscles. The chair rotates in a horizontal plane and the different planes of the head in order to receive their maximum stimulation, must first be placed in the horizontal plane. Stimulation of the horizontal canals by horizontal rotation produces a horizontal nystagmus, which is almost an action of the interni and externi.

If it were possible to produce rotation with the head on one side at right angles to the vertical position, we should produce a rotation of the longitudinal plane, which in this position of the head becomes horizontal. The canals in this plane are the superior and are the ones most affected by the rotation of the chair. The stimulation from rotation with the head in this position produces a vertical nystagmus or an action of the superior and inferior recti, which are the muscles acting in the same plane as the superior canals. It is practically impossible to place the head on one side for a rotation test unless some contrivance such as a turning table is used, and as the position is not exact, the reaction is mixed.

Rotation with the head down produces a rotation of the transverse plane, as in this position the transverse planes of the head are made horizontal and the planes are affected by the rotation of the chair. The stimulation from rotation with the head in this position is to the inferior canals mainly and the reaction produced is rotary nystagmus, which is an action mainly of the superior and inferior obliques.

The fact that three different planes of the canals do not exactly coincide with the horizontal, longitudinal, and transverse planes of the head will mean generally that in most motions of the head there is a combined stimulation. This corresponds with the combined action of the different muscles in the movements in the eyes and the two seeming irregularities probably make for smooth and even mobility.

CONCLUSION

There is a direct relationship between stimulation of the following canals and the action of the following muscles: the superior canals and the superior and inferior recti; the horizontal canals and the internal and external recti, and the inferior canals and the obliques. Also, the horizontal canals are stimulated by the movements of the head nearly in a horizontal plane, the superior in a longitudinal plane, and the inferior in a transverse plane.

The erroneous conception of the positions of these canals should be corrected and they should be called horizontal, longitudinal, and transverse respectively.

Base Hospital No. 69.

1. Phillips: Diseases of the Nose and Throat, Ed. 4, p. 312.
2. Alexander: Diseases of the Ear. Pfaundler and Schlossman: The Diseases of Children, 4.
3. Ballenger: Diseases of the Ear, Nose and Throat, Ed. 3, p. 630.
4. Gruber: Diseases of the Ear, p. 189.

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INTESTINAL AMEBAS

The bacteria no longer form the sole topic of interest to the student of diseases of microbiotic origin. The amebas have lately claimed their share of attention. The genus *Endameba*, which includes parasitic species of amebas, was established nearly forty years ago by Joseph Leidy,[1] who, in 1879, took for its type species *Endameba blattae*, a parasitic ameba of the cockroach. The discovery of the existence of a true amebic dysentery in man has given the impetus latterly to extensive researches in this field. It early became evident that not all amebas harbored in the alimentary tract are pathogenic. The differential diagnosis has been greatly complicated by the uncertainties of classifying these organisms, owing in part to the lack of knowledge of their complete life cycle and to the difficulties inherent in studying the morphology of such simple cells; hence there has been a succession of names introduced into the literature of this chapter of protozoology, only to be corrected or excluded from year to year. The classification submitted by Craig[2] to the Pan-American Scientific Congress early in 1916 has already become amended in various particulars.

According to a recent report[3] to the Medical Research Committee in Great Britain, it is now becoming generally recognized that there are three different amebas which may be present in the human bowel—the harmless *Endameba coli* and *"Endameba" nana*, and the pathogenic *E. histolytica* responsible for human dysentery. Dobell and Jepps[4] have lately asserted that the latter is a collective species, comprising a number of distinct races, strains or pure lines, distinguishable from one another by the size of the cysts that they produce. The existence of at least five such is already claimed. There is no evidence that the different races differ in their geographic distribution or in any character except size. Furthermore, these races remain constant in character within a given host, and the dimensions of the cysts are not determined by the action of the host on the parasite. In the judgment of the British protozoologists, it is practically important to recognize and distinguish the diverse races of endamebas, since in human feces the cysts are found with all diameters in a range in which noxious and innocuous forms overlap each other.

To the species of intestinal amebas just discussed Jepps and Dobell[5] have recently added a new one, deserving the dignity of a new generic name, *Diendameba fragilis*. It is a very small organism having as its most characteristic feature a duplicate nucleate system which has suggested its designation and is sufficient to distinguish it from the other species. The extreme frailness of the individuals makes it difficult to examine them in undegenerated forms except in very fresh stools, and preferably on a warm stage. No cysts or stages resembling them have ever been found; hence the difficulty of ascertaining or understanding the mode of transmission from host to host. The food of this ameba appears to consist entirely of small bacteria and yeasts living in the intestinal contents. The indications at present, which need to be substantiated by better evidence, are that it lives in the colon. There is no reason, as yet at least, to believe that *Diendameba* is a pathogenic organism.

TRAUMA AND SHOCK

Students of the ever recurring problem of shock have repeatedly pointed out seemingly irreconcilable differences between the phenomena observed by the physiologist in his laboratory manifestations and the human cases of trauma and shock that come to the attention of the surgeon. The latter observes shock as a sequence of trauma and severe pain, whereas the experimental investigator has all too often seemed to be unable to provoke the symptoms by these agencies. Wiggers[6] has pointed out, however, that in addition to the condition of low arterial pressure and an impaired peripheral circulation which the laboratory workers look on as the characteristic of shock, there is strong evidence of a clinical, experimental and even morphologic sort that functional or physical damage to the central nervous system forms an important feature likewise. Hence, says Wiggers, in regarding the shock-producing power of trauma applied peripherally, it is necessary to consider not only whether the blood pressure may be reduced to a low level in this way, but also whether demonstrable functional changes in the central nervous system take place. In other words, to the criterion of circulatory failure with its consequent impaired blood

1. Leidy, Joseph: On Amoeba Blattae, Proc. Acad. Nat. Sc., Philadelphia, 1879, **31**, 204.
2. Craig, C. F.: The Classification of the Parasitic Amebae of Man, Proc. Second Pan-American Scientific Cong., 1917, **10**, 536.
3. Dobell, C., and Jepps, Margaret W.: On the Three Common Intestinal Entamoebae of Man, and Their Differential Diagnosis, Brit. Med. Jour., 1917, **1**, 607.
4. Dobell, C., and Jepps, Margaret W.: A Study of the Diverse Races of Entamoeba Histolytica Distinguishable from One Another by the Dimensions of Their Cysts, Parasitology, 1918, **10**, 320.
5. Jepps, Margaret W., and Dobell, C.: Dientamoeba Fragilis, n. g., n. sp., a New Intestinal Amoeba from Man, Parasitology, 1918, **10**, 352.
6. Wiggers, C. J.: Shock and Circulatory Failure Following Trauma, Am. Jour. Physiol., 1918, **46**, 314.

supply to the tissues and its low blood pressure must be added the determination of the existence of a functional nervous impairment represented by apathy, reduced or abolished sensibility, and loss of reflexes.

In experiments conducted at the Cornell University Medical College in New York City, Wiggers has now demonstrated that a state of shock involving the central nervous system can be produced experimentally by trauma. It may or may not be fatal. Prolonged sensory stimulation, in contrast with severe tissue injury, may cause a temporary depression of the functions of the central nervous system, but in itself does not lead to permanent changes or death. It must not be assumed that such symptoms of shock may occur without circulatory involvement; for whenever "central nervous system shock" develops as a result of trauma it is always accompanied by distinct circulatory changes in the nature of a prolonged low peripheral resistance. The mean arterial pressure may be maintained by other factors; hence it no longer is a reliable index of the circulation. This explains why the existence of the impaired blood flow has heretofore sometimes been overlooked.

The initial stage of the circulatory disturbance is in all cases apparently represented by a reduced peripheral resistance. When the termination is fatal, the effective venous pressure falls early. At the resultant low level the cardiac discharge is accordingly reduced, so that complete circulatory failure ensues. The important fact to bear in mind is that a serious involvement of the circulation may be impending before the familiar dangerously low arterial pressure manifests itself. This is what the newer methods of hemodynamics have succeeded in revealing.

INDUSTRIAL FATIGUE

Real efficiency, not the efficiency that comes from destroying one's competitors or undermining them by intrigue, but the wholesome kind of efficiency that is signalized by a maximal continuous output of high quality, is today demanded by the world more than ever before. Many factors influence human working powers, and the scientific analysis and evolution of these factors can hardly be said to have gone beyond the initial stage. It is even now clearly seen, however, that one very important handicap to the attainment of efficiency is the production of excessive fatigue by excessive work. A paper recently prepared by the Divisional Committee on Industrial Fatigue for the use of manufacturers in the present emergency embodies a series of clear statements of the ways in which industrial fatigue interferes with maximal output and of the best known methods for reducing fatigue.[1]

Many administrators, writers and other sedentary workers have long since learned for themselves the lesson that the overtaxed mind, the jaded imagination, cannot be driven advantageously beyond a certain point. Mental fatigue is one of the well-recognized barriers to mental efficiency. Long hours do not connote a satisfactory productive activity of the mind; often they connote the reverse. It may, however, come as a surprise to some manufacturers to learn that when industrial output can be measured, a lessening of the hours of labor is sometimes actually accompanied by an increased production. In the instance of an English munition factory cited in the paper referred to, when the average weekly hours of men sizing fuse bodies were reduced from 58.2 to 51.2, the total output was increased 21 per cent. A certain granite-cutting company found that "the same man under identically the same conditions accomplished more of the same kind of work when he was working nine hours than he did when he was working ten hours. And again when the hours were reduced to eight hours, this same man accomplished still more in an eight-hour day than he did in a nine-hour day, or a considerable amount more than he did when the day was ten hours long."

Among the ways of reducing fatigue suggested in the report are the introduction of recess periods, the proper supervision of ventilation and other sanitary conditions within factories, the avoidance just as far as possible of overtime and Sunday work, the adjustment of speed to individual capacity, and the introduction of occasional variety into the work of those engaged in the often monotonous machine processes. The results achieved by the application of such methods have frequently been surprisingly satisfactory, and encourage their extension and trial on a wide scale. As a practical hint the committee is careful to point out the necessity of using objective methods of measuring and detecting fatigue. Not every man who thinks he is fatigued is really so. It does not follow that because many workers accomplish more in eight hours than in ten, they would accomplish more in two hours than in eight. The committee also touches on the psychologic factors involved, and more might well have been said on this point. The good spirit of the worker, his friendly attitude toward his employer, is a particularly important stimulus to output. The old copybook adage that willing hands make light work is as true as it ever was. The immediate and marvelous success of the reorganized Shipping Board testifies to the value of good will as a factor in industry. Fatigue is somehow lessened or its coming retarded wherever work is carried on in a spirit of eager cooperation and enthusiasm.

It may be remarked, finally, that possibly military as well as manufacturing establishments may find some suggestions of value in the consideration of the factors and significance of industrial fatigue. Apparent speed-

1. How Industrial Fatigue May Be Reduced, Pub. Health Rep., 1918, **33**, 1347.

ing up by long hours and excessive muscular work may in some cases lead to a delay in reaching the end desired. The admirable results already attained in our training camps by recognition of many of these factors of fatigue are well known. The new recruit is not inured to fatigue work rapidly by becoming fatigued too much or too frequently.

POISONING IN PAINTERS

The war, which has served to speed up to an enormous extent all of the fundamental industries, has also served thereby to direct greater attention to the dangers incident to many of the vocations. Human initiative and man power have become tremendously valuable forces which no government can afford to neglect when every iota must be conserved and utilized to meet the great emergencies of the time. The investigation of occupational diseases has accordingly assumed importance in far greater measure than appeared to be the case in the more easy-going days before the world conflict. Some of the hazards that beset the industrial worker are rendered conspicuous by the obvious character of the harm that is done. Injuries by frequent accidents, mutilations from machinery mismanagement, and physical deterioration from extreme exposures or excessive fatigue belong in such categories. But there are more subtle dangers that injure the individual in insidious and unsuspected ways. To discover these is the task of modern occupational hygiene.

An excellent illustration of what this branch of preventive medicine can accomplish is afforded by Harris[1] in a study of poisoning in painters. It has a peculiar import from the fact that frequently those already affected do not suspect the existence of symptoms of harm; still others do not seek medical aid until they have had a breakdown; and not infrequently the origin of the complaints of the afflicted fails to be identified as due to industrial conditions. In New York, Harris found a rate of prevalence of 40 per cent. of active cases of lead poisoning in examinations of more than 400 painters at the Occupational Clinic of the Health Bureau's Division of Industrial Hygiene. All of these showed definite clinical signs of plumbism, and half of the affected group were found to have lead in the urine—a significant sign—in addition to the more purely clinical evidence. The heaviest incidence of saturnism was among those who had been painters ten years or more. The action of lead is slow in asserting itself, but according to Harris less than half who have passed the age of 40 as painters escape the disease.

Of the various safeguards proposed to reduce the danger of the painter's work none rank above personal hygiene. Workers ought to be made more familiar with the hazards that lead, turpentine and benzin entail. They should be educated to make more than a perfunctory exercise of washing the face, hands, mouth and beard, particularly before eating. Facilities for cleanliness should be more available. Meanwhile, Harris[1] believes, compensation for occupational diseases, and for occupational lead poisoning in particular, will do more to safeguard the health and lives of workers than any other single legal or hygienic measure. Nevertheless we cannot absolve the individual from his share of personal responsibility acquired by an intelligent recognition of the character of his occupation.

1. Harris, L. I.: A Clinical Study of the Frequency of Lead, Turpentine and Benzin Poisoning in Four Hundred Painters, Arch. Int. Med., August, 1918, p. 129.

CALCIUM AND FAT UTILIZATION IN INFANCY

The ardent controversy as to the mode of absorption of fats from the alimentary tract has been settled. Although it would be difficult to demonstrate that no portion of ingested fat passes unaltered through the intestinal epithelium, there is no ground for believing in the older theory of absorption, which postulates the transit of the fat in emulsified form. On the contrary, there is reason to conclude that fats are chemically split in the gastro-intestinal canal into fatty acids and glycerol. The fatty acids react readily with bases to form soaps. The alkali soaps of sodium and potassium are somewhat soluble, whereas those of calcium and magnesium tend to be insoluble. Consequently, soaps of calcium are not infrequently found in the stools, particularly in the case of infants.

These are familiar facts of elementary physiologic chemistry. The deductions drawn from them have not always been as logical as the facts might demand. The appearance of soaps in the feces has been interpreted as an indication of the faulty digestion of fats. As a rule, this group of nutrients has thereupon been excluded from the diet or greatly reduced in quantity. Not infrequently, good results have followed the reduction of the fat content of milk in cases of infants exhibiting soap in the stools. Among these are the cases of so-called "fat intolerance."

A group of investigators[1] at the Boston Floating Hospital Laboratories and the Pediatric Department of the Harvard Medical School have directed attention, in cases which have generally been considered to show abnormalities in their utilization of fats, to the calcium factor in the diet rather than to the fatty acid component. They point out that a modification of cow's milk which gives a food containing the desired amounts of fat, sugar and protein does not modify or rearrange the inorganic constituents of the milk. The Boston pediatricians remind us that cow's milk is

1. Bosworth, A. W.; Bowditch, H. I., and Giblin, Louise A.: Studies of Infant Feeding, X, The Digestion and Absorption of Fats, I, Calcium in Its Relation to the Absorption of Fatty Acids, Am. Jour. Dis. Child., June, 1918, p. 397.

nature's food for the offspring of the cow, contains inorganic constituents in sufficient amounts to supply the demands of the rapid growth and development of this animal, and is especially rich in calcium and phosphoric acid, substances which the young of the cow use to develop rapidly growing bone tissue, but which the infant uses very sparingly. When fed to infants in the proportions found in cow's milk or modified cow's milk, these substances are greatly in excess of the amounts required to supply the demands of the infant, and hence are eliminated either in the urine or in the feces.

The assertion that many of the troubles encountered with bottle-fed infants receiving cow's milk must be attributed to the ill effects chargeable to the calcium in it is believed to be substantiated by experience with novel methods of modifying cow's milk. According to Bosworth, Bowditch and Giblin, it is possible to "reconstruct" the latter so as to remove much of the calcium. By the use of this reconstructed milk, very favorable results are said to have been obtained in suitable cases thus far encountered. In some classified as "fat intolerance" and "infantile atrophy," improvement has resulted from its use. We shall await the promised directions for the preparation of the feeding mixtures from cow's milk with their resultant lower content of calcium—products which are reported to offer little or no interference to the utilization of fat in cases otherwise difficult to manage dietetically without breast milk.

The Boston investigators present a further aspect of the relation of calcium to absorption by reminding us that although cow's milk has a high content of this element, the calcium metabolism of bottle-fed infants, as measured by the calcium eliminated in the urine, is seldom greater, and often less, than that found in breast-fed infants, most of the calcium being eliminated in the feces as insoluble calcium phosphate and calcium soaps. While this mode, they add, of eliminating the excess of calcium present in cow's milk is in one way a protection to the infant, in that it prevents the calcium from entering the body fluids and tissues in organic combination, subsequently to set up a toxic condition, it may, on the other hand, bring about marked nutritional disturbance. Before any profoundly divergent deductions are drawn, however, we must bear in mind that animal experiments have demonstrated beyond question that growth can proceed very satisfactorily even when inorganic salts of lime and phosphoric acid form the sole sources of these elements in the diet.

Furthermore, Holt, Courtney and Fales[2] of the Babies' Hospital in New York have challenged some of the contentions of the Boston pediatricians. They deny that there need be a serious loss of fat (otherwise than through diarrhea) when the usual simple dilutions of cow's milk are fed, whether the stools are formed or semiformed and soapy. They present evidence that a high calcium content of the intake does not necessarily cause a large fat loss in the feces. But what seems most important is the not inconsiderable risk which may attend a great reduction of the calcium in the food. We believe that prudence warrants the warning of Holt and his collaborators:

> Unless the harm caused by a fairly high calcium intake can be quite definitely demonstrated, it would seem safer to allow an excess of calcium in the intake rather than to run any risk of providing less calcium than is needed for the normal growth of the bones. A number of cases of so-called intestinal infantilism have come under our observation. The most significant fact in the history of these cases is the extremely low intake of calcium in their previous feeding. The large calcium requirement of children with a tendency to rickets hardly needs mentioning in this connection. The calcium in breast milk, though smaller in quantity, may be more available than that of cow's milk; however, it is well known that many cases of rickets and tetany occur in children fed too long exclusively on breast milk.

2. Holt, L. E.; Courtney, Angelia M., and Fales, Helen L.: Is the Amount of Calcium Usually Given in Dilutions of Cow's Milk Injurious to Infants? Am. Jour. Dis. Child., July, 1918, p. 52.

Current Comment

THE STUDENTS' ARMY TRAINING CORPS

The Students' Army Training Corps, to which reference has already been made in THE JOURNAL,[1] has now become an actuality. Units have been established at a large number of colleges and universities. A statement issued by the Committee on Education and Special Training of the War Department urges that every young man who has been planning to go to college this fall should enter the institution of his choice, matriculate and enter as a regular student. Of course, he will have registered on September 12, as required of all other men of draft age, but this will not prevent his enlisting in the Students' Army Training Corps, into which he will be inducted about October 1. By this voluntary induction the student becomes a soldier in the United States Army; he will be placed in uniform, be subject to military discipline, and will be given the pay of a private. The government also pays his tuition, housing and subsistence. Each college is provided with officers, uniforms, rifles and such other equipment as may be necessary, and essential teachers will be retained so far as is possible. The student soldiers will be given military instruction under officers of the Army and will be kept under observation and test to determine their qualifications as officer candidates and technical experts, such as engineers, chemists and physicians. After a certain period, men will be selected according to their accomplishments and assigned to military duty. A student may be assigned to an officers' training camp, to a noncommissioned officers' school, to a school for further intensive work in a specified line, or to a vocational training section of the corps for technical training of military value, or he may be transferred to a canton-

1. Medical Education and the War, Current Comment, THE JOURNAL A. M. A., Aug. 10, 1918, p. 568.

ment for duty with troops as a private. It is planned to have similar sortings and reassignments of men made at periodic intervals, probably at the end of each quarter, as the requirements of the service may demand. Students will not ordinarily be permitted to remain in the college units after the majority of their fellow citizens of like age have been called to military service. Exception to this rule will be made as the needs of the service require it in the case of technical and scientific students, who will be assigned for longer periods of study in specified lines. The technical students referred to are those taking courses in medicine, engineering and chemistry. A schedule of military work has been outlined, but this is not intended to preclude effective academic work. It will vary to some extent in accordance with the type of academic instruction taken; for example, it will be less in a medical school than in a college of liberal arts. Meanwhile, medical students in the Medical Enlisted Reserve Corps are to be called to active duty in the Students' Army Training Corps and be placed on the same basis as regards uniforms, tuition, board and housing. It is clear that premedical students are eligible for enlistment in the Students' Army Training Corps, but what disposition will be made of them is not yet clearly stated. They will be expected to remain at their studies, however, until called into active service.

THE METABOLISM OF GROWING BOYS

The large appetites of boys and girls have been observed by many a parent; but men of science have usually failed until recently to grasp the true physiologic significance of this desire for food. The real explanation has been furnished by the calorimetric observations of Du Bois[1] on the effect of age on heat production in man. He showed, as has been recorded more than once in THE JOURNAL, that the basal metabolism in boys of 12 is 25 per cent. higher than for an adult of the same height and weight, or 50 calories per square meter of body surface—the conventional unit of such measurements. Indeed, metabolism is in general relatively high in childhood, falling rapidly in adolescence, and then decreasing slowly during the rest of life. It is interesting and fortunate from a scientific standpoint that Du Bois has been able to repeat the measurements of the basal metabolism at a later period in the same subjects—Boy Scouts—whom he originally examined some time before puberty. The statistics obtained, in conjunction with Olmstead and Barr,[2] represent the results applicable after a period of two years. All of the boys, some of whom were then exhibiting signs of puberty, showed a marked decrease in metabolism. The fall incident to their adolescence is represented by the new figure, 44 calories per hour per square meter of body surface, as the average for the ages of 14 to 15 years. This is a decrease of 13 per cent. for the seven cases studied. The metabolism is, however, still 11 per cent. above the average for adult men between the ages of 20 and 40 years. Women show a metabolism that is 7 per cent. lower than that of men, or 37 calories per hour per square meter of surface. As an indication of the pronounced influence of youth on the transformation of energy in the body, Du Bois and his collaborators have actually demonstrated that the metabolism in the same boys during the twelfth year was actually greater in calories produced than during the fourteenth year, although the boys showed a gain in weight of between 35 and 50 per cent. Lusk[3] has expressed the situation in another way: The basal metabolism of an average boy of 13 years of age weighing 80 pounds and of a height of 4 feet, 10 inches may be calculated as 1,525 calories a day. This is the same as that of a man 25 years old, weighing 126 pounds and 5 feet, 2 inches tall. All of this means that a growing boy of 12 or 13 may need as much food as his father.

THE ESTIMATION OF HEMOGLOBIN

Any one who is familiar with the technic of hemoglobin estimation in the blood must recognize the empiric character of most commonly used procedures. The results obtained by the usual colorimetric readings are generally expressed in terms of percentages of the "normal," as if the latter were a fixed and readily defined standard that is obviously constant and dependable. How far from the facts such a conclusion is was clearly pointed out in 1916 by Williamson.[4] His elaborate investigation, in which the blood hemoglobin of many persons of widely varying age was accurately determined by the spectrophotometric method, brought out clearly the importance of the age factor. The amount of hemoglobin of normal persons varies so greatly at different periods of life that in determining whether a given blood contains more or less of the pigment than normal it is demonstrated to be imperative to consider the age. The variations follow a well defined curve, according to Williamson's experience, being greatest in the period preceding the sixteenth year. Between the ages of 16 and 60 there is a marked difference between the two sexes, this difference growing less after the sixtieth year. For example, the average content of hemoglobin, in grams per hundred c.c. of blood, range from 23 at birth to less than 13 at the age of 2 years, and to approximately 16 after puberty. Recently Appleton,[5] working at the Hooper Foundation for Medical Research, San Francisco, and the Lying-In Hospital, New York, has applied accurate methods in the examination of the blood of 103 children less than 2 years of age. His data likewise show the early rapid decrease and later more gradual decrease as found by previous authors. The variations in children of the same age are noticeable in the early days of life. Thus, if we take as 100 per

1. Du Bois, E. F.: Clinical Calorimetry, Paper 12, The Metabolism of Boys Twelve and Thirteen Years Old Compared with the Metabolism at Other Ages, Arch. Int. Med., June, 1916, p. 887.
2. Olmstead, W. H.; Barr, D. P., and Du Bois, E. F.: Clinical Calorimetry, Paper 27, Metabolism of Boys Twelve and Fourteen Years Old, Arch. Int. Med., May, 1918, p. 621.
3. Lusk, Graham: Food in War Time, 1918, p. 29.
4. Williamson, C. S.: Influence of Age and Sex on Hemoglobin: A Spectrophotometric Analysis of Nine Hundred and Nineteen Cases, Arch. Int. Med., October, 1916, p. 505.
5. Appleton, V. B.: Determination of Hemoglobin During Infancy by the Palmer and Van Slyke Methods, Jour. Biol. Chem., 1918, 34, 369.

cent. the average for normal adults, the figures for the children range from 164 per cent. on the first day after birth to 85 per cent. by the end of from 11 to 23 months. These data from normal children, says Appleton, taken with those of previous authors, emphasize the necessity of interpreting hemoglobin determinations in infants with the values normal for the age of the subject, rather than those normal for an adult, as standard. Similarly in older persons the variations of normal values with age and sex must be kept in mind when accurate information in this field is a prime factor.

Medical Mobilization and the War

Surgeon-General Goes Overseas

Major-General William C. Gorgas, Surgeon-General, U. S. Army, arrived safely in France, September 8.

Work Rushed on Marine Hospitals

To hasten the construction of six new marine hospitals the President, September 5, temporarily suspended the provisions of the eight-hour law. The new hospitals will be located at Boston, Baltimore, Detroit, New Orleans, San Francisco and Savannah.

Personnel of the Medical Department

For the week ending Sept. 6, 1918, the personnel of the Medical Department of the Army included:

MEDICAL CORPS: 933, including 1 major-general, 63 colonels, 112 lieutenant-colonels, 295 majors and 462 lieutenants.

MEDICAL RESERVE CORPS: 23,672, including 1 colonel, 8 lieutenant-colonels, 1,586 majors, 7,221 captains and 14,856, lieutenants. On active duty: 23,590, including 1 colonel, 8 lieutenant-colonels, 1,582 majors, 7,187 captains and 14,812 lieutenants.

MEDICAL CORPS, NATIONAL GUARD: 1,193, including 22 lieutenant-colonels, 263 majors, 257 captains and 651 lieutenants.

MEDICAL CORPS, NATIONAL ARMY: 372, including 6 brigadier-generals, 94 colonels, 261 lieutenant-colonels, 9 majors, and 2 captains.

THE DISCHARGES to date are:

Causes	Number M.C.N.A.	M.R.C.	M.C.N.G.
Physical disability	0	777	56
Inaptitude	0	286	22
Other branches of the service	3	647	76
Resignations	0	208	35
Domestic troubles	0	62	1
Needed by community	1	49	0
Deaths	1	104	7
Dismissals	0	18	4
Duty completed	0	3	0
No reason given	0	15	1
	5	2,169	202

COMMUNICABLE DISEASES IN THE UNITED STATES ARMY

The Section of Communicable Diseases, Division of Sanitation, U. S. Army Medical Department, publishes a report[1] of a study made of the status of health matters in our Army by Col. Victor C. Vaughan and Capt. George T. Palmer. The study covered a period of six months, from Sept. 29, 1917, to March 29, 1918, dealing for the most part with thirteen National Guard camps and sixteen National Army cantonments, which represent over 70 per cent. of the troops in this country during the period in question.

The death rate per thousand was 9.1 per cent. higher than that of New York, St. Louis, Pittsburgh or Chicago, but was exceeded by the death rate of New Orleans; the final analysis, however, of all the data obtained by the investigators showed conclusively that this death rate is not the result of conditions inherent in the camps and cantonments but of the personal equation, if one may use the term in this connection. The death rate in many of the camps and cantonments was considerably lower than that of the cities mentioned, less than half, demonstrating that camp life may be made as safe as that in some of our cities in which health is best guarded, and, indeed, may show a lower death rate in the corresponding age group. It is worthy of note that the death rate of the camps compared favorably with the death rate of the city or state or region from which the troops stationed in these camps were drawn.

Some of the reasons given for the wide variation in the death rates in the different camps are: 1. Some of the camps have acted as filters through which many troops have passed, leaving their most unfit on the filter. Those camps which may be designated as closed camps and which have been least employed as filters are the healthiest camps. 2. Under similar conditions the negro is more susceptible to the acute respiratory diseases than the Northern white man. Southern whites are more susceptible to pneumonia than Northern whites. In Southern camps, hookworm disease and chronic malarial infection increase susceptibility to the acute respiratory diseases. The investigation showed very conclusively that there is no reason for believing that either morbidity or mortality in any camp has been due to faulty sanitation. All camps are kept clean, and have unquestioned water supplies, satisfactory garbage and sewage removal, etc. The insanitary camp of 1898 does not exist today in the United States Army.

The principal cause of death has been pneumonia, 61.5 per cent. Only 16 per cent. of all deaths have been due to other diseases (excluding 7 per cent. due to injury) than pneumonia, meningitis, measles, scarlet fever, diphtheria and tuberculosis. Only 0.14 per cent. of all deaths were due to typhoid and paratyphoid fever, showing the great value of prophylactic inoculation against these diseases. The tuberculosis death rate was 1.7 per cent.; measles, 1.1 per cent.; scarlet fever, 0.75 per cent.; diphtheria, 0.46 per cent.; meningitis, 12 per cent. Measles, pneumonia, meningitis and scarlet fever have existed in epidemic form in a number of camps. Measles has been by far the most prevalent of the four; scarlet fever has been of minor consequence. Mumps, bronchitis and influenza have likewise been widespread, and, although not fatal in themselves, have frequently been forerunners of pneumonia.

Reviewing their study of the situation, the authors feel that the greatest single factor in the prevalence of disease in certain camps and their absence in others has been the natural susceptibility of the men. Venereal disease is excessive. Insufficient attention is paid to the character and quality of food consumed; these men have not learned that diseases are transmitted by germs most of which gain access to the body through the mouth and nose. Spitting is promiscuous. Then, there have been those aggravating factors, such as exposure, fatigue, lack of warm clothing, cold quarters by day, and cold quarters and insufficient bedding by night.

The remedy? First and foremost it seems necessary to graduate the introduction of civilians into Army life. The change has been too abrupt. Men should be called first to a semiactive reserve army. Here they should get drill and the essentials of sanitation and self-care by lecture and by demonstration. After this the transfer should be made to camp, where a man's entire time is given over to military training. Before entering camp, men should be examined for incipient disease. The suspects should be watched after separation and before their dispatch to camp. Once established in camp, transfer from camp to camp should be preceded by a thorough examination and removal of those who show signs of illness. These precautions, together with care in the proper mixture of work and rest, judicious selection in the quality and balancing of the food ration, the adequate protection of the man against cold and exposure, his protection against the sick through effective quarantine measures, and discretion in the use of the physical hardening process should moderate to a large degree the experiences of the past winter.

1. Jour. Lab. and Clin. Med., 1918, 3, 635.

Sick and Wounded

Bulletin 44, dated July 26, 1918, concerning the sick and wounded brought from England or France prescribes:

(a) Sick and wounded being brought from France or England to U. S. will be brought in Navy hospital ships or transports, whichever may be most suitable and available, except in special cases where transportation by commercial lines may be authorized.

(b) The Army will be in charge of embarkation and debarkation of all Army patients.

(c) The Navy will be charged with care of these patients while on board ships of the Navy acting as transports or otherwise. At request of Navy the Army will render such assistance in personnel and material as may be necessary.

(d) The Commanding General of American Expeditionary Force will decide what class of patients and numbers of each he desires returned to U. S. He will ascertain actual number of each class that can be accommodated on each vessel from senior naval surgeon through commanding officer of that vessel and will not exceed that number.

DISEASE CONDITIONS AMONG TROOPS IN THE UNITED STATES FOR THE WEEK ENDING AUGUST 30, 1918*

(Compiled from Telegraphic Reports Received in the Office of the Surgeon-General)

1. ANNUAL ADMISSION RATE PER 1,000 (disease only):

	This Week	Last Week
All Troops	909.6	933.8
Divisional Camps	1,123.48	1,193.6
Cantonments	990.9	930.3
Departmental and Other Troops	698.2	786.6

2. NONEFFECTIVE RATE PER 1,000 ON DAY OF REPORT:

All Troops	37.44	36.25
Divisional Camps	46.14	41.93
Cantonments	40.15	37.77
Departmental and Other Troops	29.55	31.10

3. ANNUAL DEATH RATE PER 1,000 (disease only):

All Troops	3.35	2.96
Divisional Camps	5.49	2.53
Cantonments	3.07	3.56
Departmental and Other Troops	2.51	2.48

*Including Porto Rico.

CASES OF SPECIAL DISEASES REPORTED DURING THE WEEK ENDING AUG. 30, 1918

Camps	Pneumonia	Dysentery	Malaria	Venereal: Total	Venereal: New Infections	Measles	Meningitis	Scarlet Fever	Deaths	Annual Admission Rate (per 1,000 Disease Only)	Noneffective per 1,000
Beauregard	4	..	5	66	2	10	..	..	0	1,808.4	84.15
Bowie	2	1	1	43	5	..	..	..	1	1,277.5	29.64
Cody	10	..	..	16	0	3	..	..	3	747.1	99.57
Fremont	30	..	..	72	20	4	..	..	10	602.7	37.92
Greene	..	..	..	80	3	..	..	..	0	970.5	37.50
Greenleaf	2	..	1	11	0	15	..	2	1	558.2	37.25
Hancock	2	..	6	151	20	..	..	..	1	1,416.0	30.75
Kearney	..	..	..	22	5	..	..	..	0	904.6	55.26
Logan	2	..	22	43	16	..	..	..	0	1,095.7	52.59
MacArthur	6	1	..	17	7	20	..	..	0	992.8	62.71
McClellan	8	..	2	64	1	24	..	..	1	1,162.7	47.22
Sevier	3	..	5	26	3	9	..	..	0	698.3	41.24
Shelby	17	3	11	72	9	75	1	..	5	1,476.5	52.00
Sheridan	2	..	1	208	19	18	..	..	0	1,254.3	49.56
Syracuse	..	..	..	150	0	1	..	..	0	1,283.6	67.90
Wadsworth	7	..	..	145	0	1	..	..	4	826.0	39.41
Wheeler	71	..	..	39	5	..	1	..	7	1,009.9	39.85
Custer	7	..	..	37	6	1	..	..	1	623.0	11.87
Devens	61	..	..	44	22	22	3	1	4	685.5	34.50
Dix	5	4	4	91	0	11	..	..	0	356.2	41.04
Dodge	8	..	..	208	3	38	..	..	1	1,361.8	74.14
Funston	8	..	..	59	2	56	..	..	1	1,746.7	32.19
Gordon	23	..	2	113	2	71	1	..	6	1,856.9	66.28
Grant	4	..	1	31	0	8	..	2	3	328.4	14.80
Humphreys	11	2	6	38	3	15	..	..	0	653.4	22.50
Jackson	..	3	7	809	3	16	1	..	2	1,747.2	45.85
J. E. Johnston	3	..	8	39	26	13	..	1	1	1,043.3	32.12
Las Casas	4	..	..	9	9	72	..	..	0	1,503.1	57.65
Lee	1	..	..	65	0	12	..	..	1	609.7	44.40
Lewis	23	..	..	104	4	5	..	..	0	876.4	43.20
Meade	9	1	..	448	4	12	2	..	3	919.9	30.50
Pike	17	..	10	56	1	54	1	..	9	823.4	49.35
Sherman	8	..	..	96	0	14	..	..	1	1,435.8	66.16
Taylor	7	..	..	99	5	48	..	..	3	819.9	23.65
Travis	9	2	2	121	5	..	..	..	5	1,445.2	85.46
Upton	1	..	..	163	12	6	..	1	3	731.0	41.56
N. E. Department	..	..	..	25	5	4	..	..	0	613.9	22.04
Eastern Dept.	1	..	2	86	43	15	..	..	6	582.5	17.62
S. E. Department	2	1	9	55	17	15	..	..	0	1,280.2	49.92
Central Dept.	1	..	..	62	0	2	..	2	0	901.1	22.36
Southern Dept.	1	4	6	94	34	2	1	2	12	657.5	20.96
Western Dept.	..	..	..	29	9	..	..	..	1	742.8	17.61
Aviation Camps	5	..	10	127	0	18	1	..	11	783.6	29.23
Ports of Embarkation:											
Hoboken	14	4	6	271	60	37	1	..	0	880.4	49.20
Newport News	23	4	21	95	9	12	1	..	1	758.3	58.97
Alcatraz	..	..	..	1	0	..	..	..	0	894.0	25.78
Leavenworth, D. B.	..	..	..	..	..	..	..	..	0	788.9	27.97
Columbus Bks.	2	..	..	3	0	..	..	..	0	542.7	20.69
Jefferson Bks.	..	..	2	60	1	3	..	..	1	1,516.7	115.49
Fort Logan	..	..	..	1	0	..	..	..	0	782.6	69.56
Fort McDowell	..	..	..	10	4	..	..	..	0	1,042.3	73.49
Fort Slocum	..	..	1	11	0	1	..	..	1	796.7	51.82
Fort Thomas	..	..	..	3	0	1	..	..	0	638.3	41.57
West Point	..	..	..	2	0	..	..	..	0	1,004.5	10.73
Arsenals	4	..	1	9	5	5	1	..	1	558.3	18.80
Miscellaneous:											
Small Stations	..	..	1	1	0	..	..	..	0	628.4	10.02
Gen'l Hospitals	..	..	..	..	..	..	..	..	11		
Totals	429	30	163	5,010	404	764	15	11	122	909.6	37.44

ANNUAL RATE PER 1,000 FOR SPECIAL DISEASES

	All Troops in U. S., Week Ending Aug. 30, 1918	Departmental and Other Troops, Week Ending Aug. 30, 1918	Divisional Camps, Week Ending Aug. 30, 1918	Cantonments, Week Ending Aug. 30, 1918	Expeditionary Forces, Week Ending Aug. 30, 1918
Pneumonia	14.66	4.93	28.68	16.47	8.45
Dysentery	1.02	1.21	0.85	0.94	3.44
Malaria	5.57	5.49	9.27	3.94	1.22
Venereal	171.3	93.6	222.46	213.6	19.3
Paratyphoid	0.0	0.0	0.0	0.0	0.12
Typhoid	0.20	0.28	0.34	0.08	1.28
Measles	26.12	10.71	30.92	26.97	11.58
Meningitis	0.51	0.46	0.34	0.63	1.14
Scarlet fever	0.37	0.37	0.34	0.39	1.39

Physical Examination on Embarkation

General Order 72, dated Aug. 6, 1918, concerning physical examination on embarkation prescribes:

II.—1. When a command receives orders for overseas service, all officers and enlisted men will be given a careful physical examination by medical officers, in order to determine whether or not they are fitted for full military duty in the field. Officers and enlisted men found to be physically unfit for such service will be promptly transferred from the organization and will not accompany their organization to port of embarkation. As far as practicable this examination should be made by medical officers not attached to organization undergoing examination. Camp commanders are responsible for thoroughness of physical examinations of all troops leaving their camps. With a view to reducing number of individuals which must be eliminated on receipt of orders for overseas service, it is of utmost importance that men with defects which disable for duty overseas should be transferred to development battalions, or otherwise disposed of, as soon as defects are detected.

2. Similar action should be taken to eliminate physically unfit when enlisted men are transferred from one camp or station to another camp or station for duty.

3. In both above instances specific exceptions may be made in case of men who are being sent to a point where they are destined for special or limited military service only.

4. Nothing in above instructions shall be interpreted to modify existing instructions regarding examinations for and elimination of cases of infectious disease, "contacts," and men infested with vermin in organizations moving from one camp or station to another camp or station or to a port of embarkation.

5. In case men arrive at or are sent to join organizations at port of embarkation who, for any reason, have not been given physical examination referred to above to eliminate those physically unfit for field service overseas, the C. O. of organization containing such non-examined men will report fact to commanding general of port of embarkation, who will have rigid physical examination made for such men to determine their fitness for field service overseas.

6. All instructions given previously on subject of physical examinations and at variance with these instructions are hereby revoked.

COMMISSIONS ACCEPTED, U. S. NAVAL RESERVE FORCE

Previous lists published in THE JOURNAL, June 29, July 13, 20 and 27, August 3, 10 and 31, and September 7.

ALABAMA

Goshen-Kyzar, J. H.

CALIFORNIA

Los Angeles—Castle, C. H.
Dougall, J. P.
Hutchinson, W. W.
Reeves, J. W.
San Diego—Thornton, A. J.
San Francisco—Hund, E. J.

COLORADO

Boulder—Proffitt, R. V.

CONNECTICUT

Bridgeport—Zonn, S. I.

DISTRICT OF COLUMBIA

Washington—Taylor, L. H.

FLORIDA

Tampa—Beyer, A. R.

GEORGIA

Richland—Pickett, C. E.

ILLINOIS

Chicago—Healy, M. E.
Hoodlett, J. J.
Youngs, C. A.
Glencoe—Athay, R. M.
Springfield—Southwick, H. H.

KANSAS

Topeka—Weidling, W. H.

MAINE

Portland—Leighton, A. P., Jr.

MASSACHUSETTS

Boston—Cotter, E. J.
Miniter, F. G.
Cambridge—Feeley, W. C.
Noonan, W. A.
Gardner—Jewett, E. P.
Holyoke—Brady, W. F.
New Bedford—Foster, E. E.
Sandwich—Currier, C. R.

MINNESOTA

Minneapolis—Eisenberg, D. E.

MISSOURI

St. Joseph—Ludwig, F.

NEVADA

Reno—Dahl, W. Z.
Samuels, W. L.

NEW HAMPSHIRE

Rochester—Roberts, W. J.

NEW YORK

Brockton—Brainard, F. J.
New York—Dalton, W. A.
Gillette, G. H.

OHIO
Columbus—Minthorn, H. A.

OREGON
Portland—Hare, W. B.

PENNSYLVANIA
Canton—Dann, A. E.
Harrisburg—Kilmore, F. D.
Philadelphia—Becker, J. B.
Hughes, F. L.
Mallon, E. A.
Shrom, R. E.

TEXAS
Dallas—Millwee, R. H.
Van Alstyne—Slaughter, J. M.

VERMONT
Wells River—Woodman, A. B.

VIRGINIA
Danville—Pritchett, C. B.
Norfolk—Spiegel, W.
Salem—Darden, J. C.

WASHINGTON
Chehalis—Johnson, W. R.
Ellensburg—Morris, M. J.
Seattle—Hoff, E.

WISCONSIN
Milwaukee—Leasum, C.

COMMISSIONS ACCEPTED, MEDICAL CORPS, U. S. ARMY

Previous lists published in THE JOURNAL, June 1, 22 and 29, July 13, 20 and 27, August 3, 10, 17, 24 and 31, September 7.

ALABAMA
Gadsden—Bass, H. W.
Mobile—Schwarz, J.
Winthrop, G. J.
Montgomery—Burke, R. P.
Phill Campbell—Ford, L. H.

ARKANSAS
Center Ridge—Halbrook, J. F.
Little Rock—Overstreet, W. C.
Rogers, F. O.

CALIFORNIA
Bres—Charleston, V. C.
Hollister—O'Bannon, R. W.
Long Beach—Hamman, A. F.
Los Angeles—Baker, C. D.
Mulvehill, W. W.
Walters, C. M. C.
Modesto—Falk, F. V.
Montebello—Trewhella, J. S.
Pasadena—Murray, H. W.
Pomona—Swearingen, F. C.
San Francisco—Bruman, A. K.
Sunnyvale—Barry, R. K.
Taft—Galehouse, F. C.

COLORADO
Denver—Simon, S.
Fort Collins—Brownell, W. F.
Rifle—Smith, A. E.
Wellington—Gleason, R. L.

CONNECTICUT
Bridgeport—Maxwell, I. A.
New Haven—Burke, W. P.

FLORIDA
Gainesville—Rosborough, W. F.
Hollandale—Thomas, W. R.
Lee—Mickler, W. S.

GEORGIA
Greensboro—Adams, E. G.
LaGrange—Morgan, D. E.
Macon—Walker, D.
Milltown—Burch, R. N.
Rome—Chandler, J. L.
Statesboro—Mooney, A. J.

IDAHO
Peck—Lyle, J. M.

ILLINOIS
Barry—Beaver, C. E.
Chicago—Beers, B. R.
Calhoun, W. H.
Culver, H.
Devine, E. J.
Dowson, A. W.
Falls, F. H.
Lyons, P. D.
Rubovits, W. H.
Stevenson, W. W.
Cooksville—Swinehart, B. O.
Dawson—Mayes, W. E. G.

INDIANA
Burlington—Quinn, C. E.
Foutanet—Newlin, E. O.
Fort Branch—Stephens, O. C.
Fort Wayne—Underwood, E. H.
Indianapolis—Habich, C.
Pettijohn, B. B.
Knox—Bell, H. L.
Lafayette—Swezey, H. N.
Peru—McDowell, M. A.
Tangier—Isaacs, H. H.

IOWA
Mystic—Fenton, W. J.
Shenandoah—Brush, M. O.
Troy—Prentice, G. L.

KANSAS
Coldwater—Ireland, E. M.
Emporia—Eckdall, F. A.
Sterling—Knowles, H. P.
Topeka—Allen, G. H.
Whitewater—Nossaman, A. H.

KENTUCKY
Elkton—Weathers, P. W.
Lexington—Busby, F. L.
Vallandingham, J. L.

MAINE
Deer Isle—Clark, R. W.
Foxcroft—Hall, C. C.

MASSACHUSETTS
Boston—Leary, A. J.
McCormack, J. S.
Sanborn, A. W.
Walker, W. W.
Cambridge—Chase, D. E.

MICHIGAN
Bay City—Urmston, P. R.
Benton Harbor—Burrell, H. J.
Detroit—Honhart, F. L.
Lindsay, W. I.
Lovering, W. J.
Robinson, W. H.
Young, G. R.
Fostoria—Johnson, O. G.
Freeport—Spencer, C. M.
Grand Rapids—Brotherhood, J. S.
Iron River—Seely, M. S.
Port Huron—Kesl, G. M.

MINNESOTA
Canby—Holmberg, L. J.
Duluth—Kuth, J. R.
Minneapolis—Benjamin, A. E.
St. Paul—Klein, H. N.

MISSISSIPPI
Moorhead—Hill, J. M.

MISSOURI
Cole Camp—Van Allen, J. P.
Excelsior Springs—Baird, J. F.
Joplin—Royer, D. J.
Kansas City—Outland, J. H.
Stadler, S. A.
Wyatt, T. E.
Kearney—Milligan, R. H.
Mexico—Harrison, J. F.
Jolley, J. F.
Poplar Bluff—Oxford, S. E.
Salisbury—Morey, O. T.
St. Louis—Rotter, J. C.

MONTANA
Billings—Thurrer, E. W.
Great Falls—Frizzell, R. R.

NEBRASKA
David City—Burdick, H. E.
Franklin—Smith, H. C.
Lincoln—Snipes, J. J.
Murray—Gilmore, G. H.

NEW HAMPSHIRE
Milton—Buckley, J. J.
Nashua—McLaughlin, P. J.

NEW JERSEY
Hoboken—Friedman, A.
Newark—Mikels, B. M.
Reich, A. L.

NEW YORK
Brooklyn—Fettes, D. S.
Law, D. E.
Wittenberg, J.
Buffalo—Arthurs, G. W.
Nairn, B. R.
Zielinski, W. E.
Lyons—Finigan, J. J.
New York—Mintz, M. E.
Rochester—Richman, R. D.

NORTH CAROLINA
Greensboro—Roberson, G. B.
Readsville—Abernethy, M. B.

OHIO
Ashville—Stout, J. O.
Cleveland—Garvin, J. A.
Shipley, M. H.
Dayton—Peters, A. O.
Lima—Herr, A. H.
Marion—Mouser, H. K.
New Madison—Kimmel, O. P.
Norwood—Eagon, S. E.
Parkman—Heeley, J. A.
Toledo—Hunter, I. E.
Urbana—Moore, D. H.

OKLAHOMA
Berlin—Clohesy, T. T.
Chickasha—Downey, D. S.
Cloudchief—Baker, B. W.
Tecumseh—Goodrich, E. E.

PENNSYLVANIA
Bristoria—Coen, J. A.
Freeport—Rogers, C. A.
Hepburnville—Waltz, A. D.
Joffre—Scott, W. L.
Kirkwood—Ferguson, T. R.
Mercer—Hope, P. T.
Mount Lebanon—Palmer, C. L.
Philadelphia—Stubbs, F. G.
Pittsburgh—Ertzman, R. L.
McKee, C. E.
Ohlman, I. L.
Stuart, L. H.
Williamsport—Logue, J. G.

RHODE ISLAND
Providence—Coughlin, F. A.

SOUTH CAROLINA
Orangeburg—Shecut, L. C.

SOUTH DAKOTA
Aberdeen—Johnston, M. C.
Murdy, R. B. C.
Terry—Hodges, V. R.

TENNESSEE
Dukedom—Jones, D. L.
Nashville—Thorp, M.

TEXAS
Bronte—Blanton, A. G.
Celina—Hailey, E. L.
Coleman—Lynch, T. P.
Dallas—Tomkies, J. S.
El Paso—Lamb, G. C.
Houston—Greer, A. E.
Jonesboro—Crawford, C. H.
San Antonio—Edwards, T. W.
Spur—Moore, W. R.
Sulphur Springs—Long, W. F.
Tahoka—McCoy, J. E.
Tyler—Smith, L. E.
Walde—Carroll, J. D.
Yoakum—Dufner, C. T.

UTAH
Magna—Musser, L. P.
Payson—Curtis, A. L.

VERMONT
Burlington—Courtney, J. W.

VIRGINIA
Clifton Forge—Wells, E. D.

WASHINGTON
Bellingham—Kirkpatrick, W. D.
Fallbridge—Peterson, P.
Seattle—Weichabrodt, I. A.

WEST VIRGINIA
Warwood—Abersold, G. W.

WISCONSIN
Abrams—Faulds, R. C.
Dotyville—McCabe, P. G.
Eau Claire—Seemann, W. O.
Janesville—Waufle, G. C.
Milwaukee—Gramling, H. J.
McCabe, H.
Oshkosh—Bickerl, E. F.
Wausau—Thielke, G. A.

WYOMING
Lander—Cooper, A. H.

ORDERS TO OFFICERS OF THE MEDICAL CORPS, U. S. ARMY

Alabama

To Camp Shelby, Miss., base hospital, Lieut. R. P. BURKE, Montgomery.

Arizona

To Plattsburg Barracks, N. Y., from Camp Upton, Capt. L. P. KAULL, Jerome.

California

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Camp Bowie, Lieut. O. W. BUTLER, Los Angeles.
To Camp Cody, N. M., base hospital, Capt. A. C. BRUMAN, San Francisco.
To Camp Crane, Pa., from Fort Oglethorpe, Capt. H. M. GRIFFITH, Pasadena.
To Camp Custer, Mich., from Southeastern Department, Major A. C. MAGEE, San Diego.
To Camp Dix, N. J., base hospital, from Hoboken, Capt. C. L. McCLISH, Los Angeles.
To Camp Jackson, S. C., base hospital, from Fort Oglethorpe, Capt. J. EAVES, San Francisco.
To Camp Kearney, Calif., Lieut. T. J. NOLAN, San Francisco.
To Fort McDowell, Calif., from Camp Fremont, Major O. ANDERSON, Ocean Park.
To San Francisco, Calif., Letterman General Hospital, Capt. W. P. BURKE, Redlands.

Colorado

To Fort Riley for instruction, Lieut. R. F. SHELDON, Ouray.

Connecticut

To Camp Custer, Mich., Lieut. A. D. MARSH, Hampton; from Camp Sherman, Capt. J. E. HUTCHINSON, Hartford.
To Camp Wadsworth, S. C., base hospital, Lieut. S. R. SMITH, Bridgeport.

District of Columbia

To Camp Bowie, Texas, from Fort Oglethorpe, Lieut. A. F. ROCHE, Washington.
To Camp McClellan, Ala., Lieut. W. P. KIRBY, Washington.
To Walter Reed General Hospital, D. C., from the Surgeon General's Office, Col. E. R. St HEREINER.
To Washington, D. C., Surgeon-General's Office, from Walter Reed General Hospital, Col. W. F. TRUBY.

Florida

To Camp Joseph E. Johnston, Fla., from Fort Oglethorpe, Lieut. R. D. TOMPKINS, Jasper.
To Camp Shelby, Miss., base hospital, Capt. F. J. BOWEN, Jacksonville

Georgia

To Camp Custer, Mich., Lieut. JOSEPH O. KINCAID, Atlanta.
To Camp Dix, N. J., base hospital, from Fort Oglethorpe, Capt. J. K. TRAIN, Savannah.
To Camp McClellan, Ala., Lieut. L. SMITH, Millhown. Base hospital, Lieut. W. M. FOLKS, Waycross.
To Newport News, Va., Capt. R. V. HARRIS, Savannah.

To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Devens, Mass.*, base hospital, Lieut. R. L. RHODES, Augusta.

Illinois

To Camp A. A. Humphreys, Va., from Fort Oglethorpe, Lieut. H. S. EDSON, Chicago.
To Camp Dodge, Iowa, base hospital Lieut. F. W. BODMAN, Winnetka; from Fort Riley, Lieut. E. A. CORCORAN, Chicago.
To Camp Grant, Ill., Capt. W. L. PENNIMAN, Normal; Lieut. J. C. QUITMEYER, Chicago.
To Camp Hancock, Ga., base hospital, Lieuts. O. E. CARSON, Alton; E. L. CAVENCE, Champaign.
To Camp Lee, Va., base hospital, from Fort Oglethorpe, Capt. C. H. ZOLLER, Litchfield.
To Fort Oglethorpe for instruction, Capt. H. JACKSON, Chicago.
To Newport News, Va., Lieut. L. H. MILLER, Pana.
To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Meade, Md.*, Lieut. W. D. RYAN, Philo.

Indiana

To Army Medical School for instruction, from Camp Jackson, Lieut. E. H. HARE, Indianapolis.
To Camp Custer, Mich., from Camp Sherman, Capt. P. C. TRAVER, South Bend.
To Camp Grant, Ill., Lieuts. L. N. GEISINGER, Auburn; H. V. PLOSSER, Fort Wayne.
To Camp Sevier, S. C., base hospital, Capt. R. G. HENDRICKS, Indianapolis.
To Camp Wadsworth, S. C., base hospital, Lieut. L. O. SHOLTY, Wabash.
To Camp Zachary Taylor, Ky., Lieut. W. F. DUNHAM, Kempton; from Camp Grant, Capt. J. R. DILLINGER, French Lick.
To Newport News, Va., Lieuts. C. HABICH, Indianapolis; W. A. OHMART, North Manchester; B. W. HARRIS, Uniondale.
To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to Camp Custer, Mich.*, base hospital, Lieut. R. C. OTTINGER, Indianapolis.

Iowa

To Camp Bowie, Texas, base hospital, Lieut. C. E. MAGOUN, Sioux City.
To Camp Custer, Mich., Lieut. J. W. FONDA, Council Bluffs.
To Camp Grant, Ill., Capt. C. R. ARMENTROUT, Keokuk; Lieut. F. R. MENAGH, Denison.
To Camp Pike, Ark., base hospital, Lieut. G. D. SCHOONMAKER, Philadelphia.
To Camp Shelby, Miss., base hospital, Capt. C. A. KATHERMAN, Sioux City.
To Fort Oglethorpe for instruction, Capt. C. W. MEHLOP, Dubuque.
To Fort Worth, Texas, Carruthers Field, as flight surgeon, from Mineola, Capt. O. J. BLESSIN, Postville.
To Hoboken, N. J., Lieut. G. GOULD, Iowa City.
The following order has been revoked: *To Camp McClellan, Ala.*, from Eastern Department, Capt. S. A. O'BRIEN, Mason City.

Kansas

To Cambridge, Mass., Lieut. L. G. EASTMAN, Auburndale.
To Camp Bowie, Texas, base hospital, Lieut. R. S. PICKLER, Beloit.
To Fort Oglethorpe for instruction, Capt. E. D. ELBRIGHT, Wichita.
To Fort Riley, base hospital, Capt. F. J. WALKER, Wichita.
To Fort Sam Houston, Lieut. S. H. KELLAN, Cherryvale.

Kentucky

To Camp Gordon, Ga., base hospital, Lieut. D. T. ADAMS, Covington.
To Camp McClellan, Ala., Capt. G. W. THRELKELD, Prospect.
To Fort Oglethorpe for instruction, Capt. C. T. Wolfe, Louisville.
To Fort Snelling, Minn., from Army Medical School, Lieut. D. B. ROACH, Cadiz.

Maine

To Camp Upton, N. Y., Capt. A. H. DAMON, Limestone.
To Washington, D. C., for conference, and on completion *to Camp Sherman, Ohio*, to examine the command for nervous and mental diseases, from Camp Wadsworth, Major F. E. LESLIE, Andover.

Maryland

To Camp Upton, N. Y., Lieut. E. M. SULLIVAN, Westminster.
To Camp Zachary Taylor, Ky., base hospital, from Camp Meade, Capt. T. R. PAYNE, Corbett.
To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Upton, N. Y.*, Lieut. F. E. ROBERTS, Baltimore.
The following order has been revoked: *To Camp Dodge, Iowa*, base hospital, Lieut. J. K. ORMOND, Baltimore.

Massachusetts

To Camp Devens, Mass., base hospital, from Fort Oglethorpe, Major A. W. GEORGE, Boston.
To Camp Lee, Va., base hospital, Capt. A. M. DODGE, Boston.
To Camp Upton, N. Y., base hospital, Capt. W. G. DROUIN, Holyoke.
To Fort Oglethorpe, evacuation hospital, from Boston, Lieut. J. H. SHORTELL, Boston. For instruction, Lieut. T. F. WHEELDON, Boston.
To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Hancock, Ga.*, base hospital, Capt. P. W. GAY, Malden.
To Syracuse, N. Y., as tuberculosis examiner, from New Haven, Lieut. E. H. GANLEY, Methuen.
The following order has been revoked: *To Camp Dix, N. J.*, Lieut. W. F. BRADY, Holyoke.

Michigan

To Camp McClellan, Ala., base hospital, Lieut. W. N. SIMONS, Detroit.
To Camp Sherman, Ohio, base hospital, Lieut. M. S. SEELY, Iron River.
To Camp Wadsworth, S. C., from Camp Zachary Taylor, Lieut. A. J. RADZINSKI, Detroit.
To Fort Des Moines, Iowa, base hospital, Capt. W. K. REXFORD, Detroit; Lieut. D. H. McRAE, Detroit.
To Fort Oglethorpe, evacuation hospital, from Camp Zachary Taylor, Capt. J. A. ELLIOTT, Battle Creek.

Minnesota

To Boston, Mass., Harvard Graduate School of Medicine, for instruction, from Camp A. A. Humphreys, Lieut. M. A. DESMOND, Glenwood.
To Camp Grant, Ill., Capt. E. L. HALL, Russell.
To Cincinnati, Ohio, from Fort Riley, Lieut. A. A. TOFTE, Pine City.
To Fort Oglethorpe, evacuation hospital, from Camp Sevier, Capt. B. A. KAMP, Albert Lea.

Mississippi

To Camp Custer, Mich., from Camp Sherman, Major R. C. ELMORE, Durant.
To Camp McClellan, Ala., Lieut. L. T. FERRELL, Hazelhurst.
To Newport News, Va., Lieut. J. S. GIBSON, Crystal Springs.

Missouri

To Camp Beauregard, La., base hospital, Lieut. J. P. JOLLEY, Mexico.
To Camp Bowie, Texas, base hospital, Lieut. J. R. LIONBERGER, St. Louis.
To Camp Custer, Mich., base hospital, from Fort Riley, Capt. H. S. ROWLETT, Maryville.
To Camp Pike, Ark., base hospital, Capt. J. W. MacDONALD, Clayton.
To Camp Shelby, Miss., base hospital, Lieut. G. C. LYTTLE, St. Louis.
To Fort Oglethorpe, evacuation hospital, from New York, Lieut. O. B. ZEINERT, St. Louis.
To Fort Worth, Texas, from Sacramento, Capt. N. W. SHARPE, St. Louis.
To Manhattan, Kan., State Agricultural College, to examine and give medical attention to drafted men, Capt. F. M. O'KELLEY, Sikeston.
To New Orleans, La., Tulane University, to examine and give medical attention to drafted men, from Fort Riley, Lieut. S. S. STEWART, St. Louis.
To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to his proper station*, from Camp Pike, Capt. A. S. J. SMITH, St. Joseph.
To Syracuse, N. Y., as tuberculosis examiner, from New Haven, Lieut. J. L. MARDER, St. Louis.

Montana

To Camp Kearney, Calif., from Camp Lewis, Capt. T. W. WELSH, Roundup.
To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to his proper station*, from Fort Sill, Lieut. J. J. TOBINSKI, Missoula.

Nebraska

To Camp Custer, Mich., from Camp Sherman, Capt. O. Martin, Omaha.
To Camp Meade, Md., as tuberculosis examiner, from Camp Sheridan, Lieut. E. O. WILSON, Madison.
To Fort Des Moines, Iowa, base hospital, Capt. J. R. BLACKMAN, Hastings.
To Fort Riley for instruction, Lieut. E. G. JOHNSON, Grand Island.
To Fort Sam Houston, Texas, Lieut. C. W. JEFFREY, Oceola.
To Washington, D. C., for instructions, from Fort Oglethorpe, Capt. L. CRUMMER, Omaha.

New Hampshire

To Camp Hancock, Ga., base hospital, Capt. L. H. COGSWELL, Warner.
To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp McClellan, Ala.*, base hospital, Lieut. G. S. FOSTER, Manchester.

New Jersey

To Camp Hancock, Ga., base hospital, from Camp Meade, Lieut. M. B. FINNERAN, Jersey City.
To Camp Wheeler, Ga., base hospital, Lieut. A. E. OLPP, West Hoboken.
To Camp Zachary Taylor, Ky., as orthopedic surgeon, from Fort Oglethorpe, Lieut. J. L. SHOEMAKER, Camden.
To Fort Oglethorpe for instruction, Lieut. J. C. HUGHES, Bayonne.
To Fort Worth, Texas, Taliaferro Field, as flight surgeon, from Mineola, Capt. A. C. ZEHNDER, Newark.
To Syracuse, N. Y., as tuberculosis examiner, from New Haven, Lieut. G. E. HARHEN, Newark.
The following order has been revoked: *To Camp Zachary Taylor, Ky.*, as orthopedic surgeon, from Fort Oglethorpe, Lieut. T. L. CALDRONEY, Paterson.

New York

To Camp Custer, Mich., from Camp Sherman, Capt. J. J. CORBETT, Syracuse.
To Camp Dix, N. J., base hospital, Capt. J. A. COX, Albany.
To Camp Greene, N. C., base hospital, Capt. E. W. KENNEDY, Rochester.
To Camp McClellan, Ala., Lieuts. E. M. TENCH, Buffalo; H. HERMAN, New York.
To Camp Sevier, S. C., base hospital, Lieut. L. D. ROCHE, New York.
To Cape May, N. J., Lieut. W. A. KRIEGER, Poughkeepsie.
To Fort Oglethorpe for consultation with commanding officer and the chief of the surgical service at U. S. Army General Hospital, and on completion *to his proper station* at Washington, Lieut.-Col. C. H. PECK, New York.
To Fort McPherson, Ga., from New Haven, Capt. R. E. PLUNKETT, Whitehall.
To Hampton, Va., Langley Field, as flight surgeon, from Arcadia, Fla., Capt. W. W. GILL, New York.
To Houston, Texas, Ellington Field, as assistant to flight surgeon, from Mineola, Capt. J. D. GULICK, Schenectady.
To Newport News, Va., Lieut. L. GOLDFARB, Brooklyn.
To Rockefeller Institute for instruction in the treatment of infected wounds and on completion *to Camp Greene, N. C.*, base hospital, Capt. G. H. REICHERS, Brooklyn. On completion *to Camp Lee, Va.*, base hospital, Capt. E. F. SIBLEY, Kingston. On completion *to Camp Meade, Md.*, base hospital, Lieuts. M. BELLIN, Albany; C. V. O'BRIEN, Brooklyn.
The following order has been revoked: *To Camp Greene, N. C.*, to examine the command for nervous and mental diseases, from Camp A. A. Humphreys, Capt. E. HOLLEY, Brooklyn.

North Carolina

To Camp McClellan, Ala., from Camp Lee, Lieut. H. W. TIDMARSH, Randleman.
To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Dix, N. J.*, base hospital, Capt. A. W. MOORE, Charlotte.

North Dakota

To Camp Dodge, Iowa, base hospital, Capt. T. O. E. MOELLER, Devils Lake.
To Fort Des Moines, Iowa, base hospital, Lieut. A. F. BRATRUD, Grand Forks.

Ohio

To Army Medical School for instruction, from Garden City, Lieut. D. H. MacDONALD, Cleveland.
To Camp Cyrus, Pa., from New York, Capt. F. J. BIDWELL, Toledo.
To Camp Custer, Mich., Lieuts. E. J. CURTISS, Lima; R. C. FARRIS, Porum.
To Camp Greene, N. C., base hospital, Lieut. C. G. DEW, Nelsonville.
To Camp Kelly, Texas, as assistant to flight surgeon, from Mineola, Capt. M. H. URNER, Cincinnati.
To Fort Oglethorpe, evacuation hospital, from Camp Sevier, Lieut. J. M. McGEORGE, Salem; from Camp Sheridan, Capt. L. C. COSGROVE, Swanton.
To Newport News, Va., Lieuts. H. B. CLOUD, Canton; G. F. BOWMAN, Toledo.
To Syracuse, N. Y., as tuberculosis examiner, from New Haven, Capt. C. A. FALLER, Cincinnati.

Oklahoma

To Camp Abraham Eustis, Va., as assistant to camp surgeon, from Fort Oglethorpe, Lieut. S. B. BELLINGER, McAlester.
To Camp Shelby, Miss., from Camp Bowie, Capt. J. G. HARRIS, Muskogee.

Oregon

To Camp Kearney, Calif., from Fort Riley, Lieut. J. O. VAN WINKLE, Jefferson.

Pennsylvania

To Army Medical School for instruction, from Camp Wheeler, Lieut. B. F. FULTON, Pittsburgh; from Camp Zachary Taylor, Lieut. J. K. ANDERSON, Pittsburgh.
To Camp Custer, Mich., Lieut. H. M. KUEHNER, Philadelphia.
To Camp Gordon, base hospital, Lieut. J. W. BURKETT, Moon Run.
To Camp Greene, N. C., base hospital, Lieut. J. H. HATWELL, Philadelphia.
To Camp Hancock, Ga., base hospital, Lieut. D. BEVERIDGE, Washington.
To Camp McClellan, Ala., Capt. R. REESER, Columbia.
To Camp Upton, N. Y., Capt. A. W. SHERRILL, Pittsburgh; Lieuts. W. W. LIVINGSTON Dunlo; E. E. WEISS, Johnsonburg.
To Fort Oglethorpe for instruction, Lieut. A. S. SICKMAN, Lock.
To Newport News, Va., Lieuts. R. S. ALSTON, Philadelphia; W. J. FETHEROLF, Steinsville.
To Rockefeller Institute for instruction in the treatment of infected wounds, and on completion *to Camp Greene, N. C.*, base hospital, Lieut. H. C. WALLACE, Pottsville. On completion *to Camp Meade, Md.*, base hospital, Capt. G. B. MORELAND, Pittsburgh.
To Syracuse, N. Y., as tuberculosis examiner, from New Haven, Capt. C. M. MALONE, Shamokin.
To Williamsbridge, N. Y., from Camp Devens, Capt. J. S. MACKRELL, Pittsburgh; from Camp Dix, Capt. C. A. STILLWAGON, Pittsburgh.

Porto Rico

To Camp Las Casas, P. R., Lieut. E. L. C. PURCELL, Ponce; from Camp Meade, Lieut. J. H. FONT, Barranquitas.

South Dakota

To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to Camp Custer, Mich.*, base hospital, Capt. W. A. BATES, Northville.

Tennessee

To Camp Lee, Va., base hospital, from Fort Oglethorpe, Capt. D. R. PICKENS, Nashville.
To Camp McClellan, Ala., Lieut. W. T. HARVELL, Arlington.
To Camp Pike, Ark., base hospital, Capt. P. DeWITT, Nashville; Lieut. O. F. WALKER, Memphis.
To Fort Oglethorpe, evacuation hospital, from Fort Screven, Capt. C. D. BLASSINGAME, Memphis.
To Newport News, Va., Lieut. I. N. HUDKINS, Bradford.
The following order has been revoked: *To Camp Pike, Ark.*, from Fort Riley, Lieut. H. O. ANDERSON, Williamsport.

Texas

To Camp Beauregard, La., from Camp Cody, Capt. T. C. BROOKS, Bay City.
To Camp Bowie, Texas, base hospital, Lieut. T. C. GILBERT, Dallas.
To Camp Logan, Texas, as assistant to camp surgeon, from Camp Bowie, Lieut. H. B. SMITH, Dallas.
To Camp MacArthur, Texas, base hospital, Lieut. J. C. FALVEY, Numble.
To Camp Travis, Texas, base hospital, from Southern Department, Lieut. T. K. JONES, Henrietta.
To Fort Oglethorpe for instruction, Capt. G. D. GRIMES, Houston; T. D. FRIZZELL, Quanah.
To Newport News, Va., Lieut. A. J. TURNER, Beeville.

Utah

To Camp Bowie, Texas, base hospital, Capt. H. LYNCH, Salt Lake City.

Vermont

To Camp Custer, Mich., Lieut. E. J. CRAY, Brandon.
To Fort Schuyler, N. Y., from Camp Lee, Capt. W. E. LAZELL, Barre.
To Fort Totten, N. Y., from Rockefeller Institute, Capt. J. H. COLE, Bennington.

Virginia

To Camp Wheeler, Ga., base hospital, Capt. J. W. WHITE, Norfolk.
To Hoboken, N. J., evacuation hospital, Major B. L. HILLSMAN, Richmond.
To Newport News, Va., Lieut. J. L. WRIGHT, Keezletown.

Washington

To Camp Lewis, Wash., base hospital, Lieut. J. H. CRAMPTON, Spokane.

West Virginia

To Camp McClellan, Ala., Capt. W. W. KOINER, Sullivan.
To Fort Oglethorpe for instruction, Capt. J. D. SCHMIED, New Martinsville.

Wisconsin

To Boston, Mass., Harvard Graduate School of Medicine, for instruction in orthopedics, from Camp Devens, Lieut. H. E. BUNDY, Milwaukee.
To Camp Grant, Ill., Capts. R. C. FAULDS, Abrams; R. P. POTTER, Marshfield; Lieuts. F. P. MEIS, Gilman; E. H. TOWNSEND, Jr., New Lisbon; T. J. SHEEHY, Tomah.
To Camp Sherman, Ohio, base hospital, Lieut. W. J. WINNEMANN, Athens.
To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to Fort Riley*, base hospital, Lieut. H. C. MAURER, Beloit.
To Williamsbridge, N. Y., from Camp Dix, Lieut. T. C. H. ABELMANN, Watertown.

COMMISSIONS OFFERED AND ORDERED TO DUTY ON ACCEPTANCE

Alabama

To Fort Oglethorpe for instruction, Capt. J. H. EDMONSON, Birmingham; Lieut. L. M. WALKER, Plantersville.

Arizona

To Fort Riley for instruction, Lieut. E. J. GOTTHELF, Tucson.

Arkansas

To Fort Oglethorpe for instruction, Lieuts. O. HOWTON, Osceola; J. D. MITCHELL, Uniontown.
To Fort Riley for instruction, Lieuts. C. W. McLAIN, Gurdon; H. D. BOGART, Marianna.
To Washington, D. C., Elizabeth's Hospital, for instruction, Capt. R. F. DARNALL, Little Rock.

California

To Camp Fremont, Calif., base hospital, Lieut. J. MONTELCONE, Los Angeles.
To Fort Oglethorpe for instruction, Capts. H. L. PARISH, Oakland; F. W. BURNS, Pomona; G. L. MARION, San Francisco.
To Fort Riley for instruction, Capt. F. C. FERRY, Los Angeles; Lieuts. H. R. OSBORN, Fillmore; C. T. BULLARD, King City; W. C. DUNCAN, Los Angeles.

Colorado

To Fort Oglethorpe for instruction, Lieut. E. K. SHELTON, Antonio.
To Fort Riley for instruction, Capts. D. O. NORTON, Fort Collins; J. ATCHESON, Jr., Idaho Springs; Lieuts. W. K. HILLS, Colorado Springs; B. F. BLOTZ, Rocky Ford.

Connecticut

To Fort Oglethorpe for instruction, Major L. W. BACON, New Haven; Capts. C. L. PAGE, Litchfield; P. H. ROGERS, West Haven.
To New Haven, Conn., Yale Army Laboratory School, for instruction, Capt. E. H. BLAIR, Hartford.

Delaware

To Fort Oglethorpe for instruction, Capt. J. P. LOFLAND, Milford.

District of Columbia

To Camp Sherman, Ohio, base hospital, Lieut. T. A. POOLE, Washington.
To Fort Oglethorpe for instruction, Capt. P. E. LARKIN, Washington.

Georgia

To Fort Oglethorpe for instruction, Capts. T. R. AYCOCK, Monroe; J. T. KING, Quitman; Lieuts. G. T. HENDRY, Blackshear; W. HUTCHINS, Buford; M. MASHBURN, Cumming; W. M. GERTMAN, Hazlehurst; B. E. HORTON, McDonough; W. P. ALLEN, Woodbury.

Idaho

To Camp Kearney, Calif., to examine the command for nervous and mental diseases, Capt. R. LOWE, Boise City.
To Camp Lewis, Wash., for instruction, Capt. D. L. BLEVINS, Idaho Falls.
To Fort Riley for instruction, Lieut. C. K. HENKLE, Troy.

Illinois

To Camp Zachary Taylor, Ky., to examine the command for nervous and mental diseases, Lieuts. T. G. CHARLES, Beardstown; E. C. PRATT, Upper Alton.
To Fort Oglethorpe for instruction, Major J. L. PORTER, Chicago; Capts. A. F. BECHTOLD, Belleville; W. C. MITCHELL, Bradford; J. R. MacNAMARA, Chicago; A. F. KAESER, Highland; L. T. RHOADS, Lincoln; H. H. SHEETS, Oregon; A. G. GUMM, Paris; E. P. STAFF, Ramsey; Lieuts. J. P. LONG, Astoria; C. R. BRICHAM, Brookville; L. C. MILLER, Champaign; J. A. KROPACEK, Chicago; J. A. SULLIVAN, East St. Louis; P. T. DIAMOND, Evanston; I. R. ROBERTS, Kansas; C. L. CASEY, Kewanee; W. L. COTTINGHAM, Paxton; E. BOND, Stronghurst; H. C. HOUSER, Westfield.
To Fort Riley, Lieuts. P. F. SHAFFNER, Chicago. For instruction, Lieut. F. C. FINK, Pleasant Plains. *To examine the command* for nervous and mental diseases, Capt. G. W. BROCK, Atlanta.
To New Haven, Conn., U. S. Army General Hospital, Lieut. A. W. SCHMIDT, Chicago. Yale Army Laboratory School, for instruction, Lieuts. P. B. RABENNECK, Nashville; B. RUNNELS, Milledgeville; C. B. McCLURG, West Chicago.

Indiana

To Fort Oglethorpe for instruction, Capts. E. G. COVERDALE, Decatur; J. T. HAZEL, Freedom; F. M. HARTSOOK, Freeland Park; S. H. CARAWAY, S. O. LEAK, Indianapolis; A. T. CUSTER, Linton; J. L. GILBERT, Logansport; F. A. PRIEST, Marion; C. C. COLLINS, Roachdale; C. D. EHRMAN, Rockport; J. B. MAPLE, Shelburn; H. W. DALE, West Lebanon; Lieuts. R. W. BROOKIE, Converse; R. R. POLLOM, Darlington; F. J. McMICHAEL, Gary; J. F. CASPER, Jasper; N. L. MEDCALF, Lamar; W. F. CRAFT,

Linton; M. F. PARRISH, Monroe; H. W. TAYLOR, Rochester.
To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. A. C. WILLIAMS, Reynolds.
To Walter Reed General Hospital, D. C., Capt. E. J. LENT, South Bend.

Iowa

To Fort Oglethorpe for instruction, Capts. S. E. LINCOLN, Des Moines; G. L. ATKINS, Superior; Lieuts. L. J. LINEHAN, Dubuque; H. P. MAHAN, Ellsworth; H. E. MIDDLETOWN, Lake City; W. A. HENNEGER, La Motte; W. E. CODY, Merrill; H. RISK, Oelwein.
To Fort Riley for instruction, Capts. A. C. RHINE, Hampton; G. RYAN, New Sharon; Lieuts. C. H. BURKE, Algona; M. E. DINGMAN, Urbana.

Kansas

To Fort Oglethorpe for instruction, Capts. O. C. BAIRD, S. STEELE, Chanute; C. D. BLAKE, Ellis; H. G. SHELLY, Mulvane; W. F. OSBURN, Parsons; W. H. CARTER, Lieut. A. E. GARDNER, Wichita.
To Fort Riley for instruction, Lieuts. C. J. MILLS, Lebo; G. D. RUTH, Moundridge; J. B. BLADES, Randall.

Kentucky

To Camp Jackson, S. C., base hospital, Major E. B. BRADLEY, Lexington.
To Fort Oglethorpe for instruction, Capts. O. H. SHIVELY, Campbellsville; E. B. PENDLETON, Hartford; F. W. HINKLE, Louisville; Lieuts. J. L. RUSSELL, Adairville; J. M. PREWITT, Covington; M. C. BAKER, Louisville.
To New Haven, Conn., U. S. Army General Hospital, Lieut. G. H. Wells, Glasgow.

Louisiana

To Fort Oglethorpe for instruction, Capt. A. H. GLADDEN, Monroe.

Maine

To Fort Oglethorpe for instruction, Capt. C. M. ROBINSON, Portland; Lieut. R. J. MORIN, Lewiston.
To New Haven, Conn., U. S. Army General Hospital, Lieut. E. B. FRISBEE, Bridgton.

Maryland

To Fort Oglethorpe for instruction, Capt. J. W. COLE, Lieut. J. A. SKLADOWSKY, Baltimore.

Massachusetts

To Edgewood Arsenal, Md., Lieut. W. F. MAHONEY, Westboro.
To Fort Oglethorpe for instruction, Major H. ROBB, Winchester; Capts. J. W. CALLAHAN, Brockton; D. L. MARTIN, Dorchester; W. E. HUNT, Malden; E. W. BURT, Westport; W. G. CURTIS, Wollaston; Lieuts. N. K. FORHAM, Billerica; J. H. GOODING, Boston; R. E. ANDREWS, Cambridge; W. M. COLLINS, Lowell; F. W. SMITH, Newton; O. L. DASCOMBE, Waltham; H. W. TRASK, West Boylston; H. L. JACKSON, West Springfield; T. M. PROCTOR, Wrentham.
To Washington, D. C., St. Elizabeth's Hospital, for instruction, Capt. W. T. GARFIELD, Cambridge.

Michigan

To Fort Oglethorpe for instruction, Capts. I. S. MORRIS, J. ROSENTHAL, Detroit; W. H. FORCE, Ludington; G. A. HOLLIDAY, Traverse City; Lieuts. W. I. SEARLES, Ann Arbor; J. H. MULLER, Grand Rapids.
To New York, Neurological Institute, for instruction, Capt. R. C. STONE, Battle Creek.

Minnesota

To Camp Grant, Ill., base hospital, Capt. E. BOECKMANN, St. Paul.
To Fort Oglethorpe for instruction, Capt. A. E. COMSTOCK, St. Paul; Lieut. T. ZISKIN, Minneapolis.
To Fort Riley for instruction, Capt. E. JAMIESON, Walnut Grove; Lieut. F. S. McKINNEY, Minneapolis.

Mississippi

To Fort Oglethorpe for instruction, Capt. C. E. SPENCER, Verona; Lieuts. F. P. TURNER, Cleveland.

Missouri

To Camp Sevier, S. C., base hospital, Capt. W. H. MINTON, St. Joseph.
To Fort Oglethorpe for instruction, Capts. T. G. ORR, Kansas City; J. A. HARTMANN, V. B. KIEFFER, H. B. MILLER, J. C. MURPHY, C. S. REHFELDT, St. Louis; H. G. SAVAGE, Warsaw; Lieuts. L. R. MONDAY, Richland; K. R. BARTUM, Sedalia; J. D. POE, St. Louis.
To Fort Riley for instruction, Capts. P. S. TATE, Farmington; R. G. LAMSON, Neosha; Lieuts. A. E. ALLDER, Cane Hill; W. R. SHAEFFER, Columbia; L. S. BOWERS, Granby; L. HURWITZ, Joplin; B. O. HARTWELL, Maysville; C. H. ALLEN, Odessa; F. E. DEAL, Slater.
To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. W. J. HUNT, St. Joseph.

Montana

To Fort Riley, base hospital, Capt. E. M. PORTER, Great Falls. For instruction, Capt. J. H. RIFFEY, Hedgesville; Lieuts. W. A. HULBUSH, Geraldine; J. E. FUHRER, Ronan.

Nebraska

To Camp Gordon, Ga., base hospital, Lieut. J. S. LEISURE, Ingleside.
To Fort Oglethorpe for instruction, Capts. F. P. DORSEY, Hartington; W. T. CARSON, Hastings; H. C. SUMNEY, Omaha; Lieut. W. H. CRUTCHER, Lincoln.
To Fort Riley for instruction, Lieuts. A. E. BRIX, Lexington; J. C. FOLLMANN, G. J. KADAVY, Omaha.

New Jersey

To Camp Hancock, Ga., Lieut. C. B. KEENEY, Summit.
To Fort Oglethorpe for instruction, Lieuts. J. E. DUFFY, Ridgefield Park; H. T. RICHARDSON, Trenton.

New Mexico

To Fort Oglethorpe for instruction, Lieut. W. F. GLASIER, Carlsbad.
To Fort Riley for instruction, Capt. H. G. WILLSON, Gallup; Lieut. E. J. HUBBARD, Dexter.

New York

To Camp Devens, Mass., base hospital, Capt. E. D. RUDDEROW, New York.
To Camp Jackson, S. C., base hospital, Major G. R. BUTLER, Brooklyn.
To Camp Meade, Md., for instruction, Capt. E. LONG, New York.
To Fort Oglethorpe for instruction, Major B. F. KNAUSE, Brooklyn; Capts. H. W. GISSEL, J. LOGUE, Brooklyn; M. J. BURSTEIN, New York; Lieuts. S. Z. SELLECK, Bath; C. A. BREITLING, Brooklyn; E. P. FORRESTEL, Buffalo; R. H. MAYHEW, Canaseraga; J. L. KINNER, Elmira; V. I. JACOBSOHN, Mineola; C. E. FROATZ, M. M. HOLZMAN, H. M. KOMAROFF, H. MICHAELIS, H. J. SCHWARTZ, New York; C. OVERTON, White Plains.
To Fort Riley for instruction, Lieut. S. L. SCIBETTA, Buffalo.
To New Haven, Conn., Yale Army Laboratory School, for instruction, Capt. A. E. LEACH, Mount Morris; Lieut. P. MOE, Ja., Katonah.

North Carolina

To Camp Sheridan, Ala., base hospital, Lieut. M. R. GIBSON, Raleigh.

Ohio

To Ann Arbor, Mich., psychopathic hospital, for intensive training, Lieut. C. W. IRISH, Barberton.
To Camp Sheldby, Miss., Capt. C. W. McGAVRAN, Columbia.
To Fort Oglethorpe for instruction, Capts. H. C. LUCK, Cleveland; G. E. WINN, Defiance; H. E. DWIRE, Nevada; H. PRIMM, Ravenna; C. A. BURRITT, O. HASENCAMP, Toledo; R. L. CAMERON, Youngstown; Lieuts. J. W. H. BEACH, Arlington; C. W. KIRKLAND, Bellaire; E. SHELDON, Bloomdale; C. L. McDONALD, Cleveland; F. F. DAVIS, East Liverpool; W. D. MAAG, Frankfort; E. A. BECHTEL, Montpelier; G. F. BARNETT, Painesville; O. C. HENDERSON, Portland; A. R. KENT, Springfield; J. I. DAVIS, Wilmington; J. S. LEWIS, Ja., Youngstown.

Oklahoma

To Fort Oglethorpe for instruction, Lieuts. B. DAVIS, Cushing; F. F. JONES, Pawhuska.
To Fort Riley for instruction, Capt. W. B. HUDSON, Yale; Lieuts. I. I. JOHNSON, Bragg; R. H. SHERRILL, Broken Bow; O. G. BACON, Davidson; F. R. DOLSON, Faxon; A. M. McMAHAN, Hilldale; B. H. BURNETT, Hulen; C. A. HOWELL, Manitou; C. W. AREENDELL, Ponca City; B. C. HARRIS, Sapulpa; S. S. MOHRMAN, Tulsa.

Oregon

To Fort Riley for instruction, Lieut. R. W. WALTON, Salem.

Pennsylvania

To Ann Arbor, Mich., State Psychopathic Hospital, for intensive training, Lieut. J. F. NORRIS, Somerset.
To Camp Hancock, Ga., Capt. W. C. MAXWELL, Pittsburgh.
To Camp Wadsworth, S. C., Capt. E. H. SLOAN, Ben Avon.
To Fort Oglethorpe for instruction, Capts. J. M. GELWIX, Chambersburg; W. B. DENSLOW, G. H. WALKER, C. W. WIRTS, Pittsburgh; Lieuts. I. FLEITAS, Chestnut Hill; W. W. HOBSON, Dormond; E. H. THOMPSON, Frankfort; J. L. ARNOLD, Harrisburg; M. H. KUDLICH, Hazleton; G. E. HALYAMA, Jeannette; R. I. SAGERSON, Johnstown; W. N. ARMSTRONG, Lock Haven; L. O. MAHR, Loganton; S. R. W. McCUNE, New Castle; W. D. BARRY, Philadelphia; J. HODGKISS, C. C. LANG, Pittsburgh; A. P. HYDE, Sharon; P. C. BOORD, Silver Creek.
To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieuts. E. O. DAY, Philadelphia; G. W. RAMSEY, Washington.

South Carolina

To Fort Oglethorpe for instruction, Capt. H. L. SHAW, Fountain Inn; Lieuts. G. C. STUART, Eastover; C. E. HOUSTON, Florence.

Tennessee

To Camp Zachary Taylor, Ky., base hospital, Lieut. J. B. BLUE, Memphis.
To Fort Oglethorpe for instruction, Capts. W. N. LYNN, Knoxville; W. S. CLACK, Rockwood; Lieuts. N. W. KELLY, Covington; P. E. MARSH, Kingsport; S. BURCHART, Memphis; B. N. WHITE, Murfreesboro; T. A. WHITFIELD, Nashville.

Texas

To Camp Cody, N. M., base hospital, Capt. E. H. IRVIN, El Paso.
To Fort Oglethorpe for instruction, Capts. F. M. HALE, Ballinger; C. E. DURHAM, Hico; G. HAMILTON, Houston; Lieuts. P. J. FULLINGIM, Decatur; B. F. CLUTTER, El Paso; J. W. E. H. BECK, Texarkana; E. SMITH, Waco.
To Fort Riley for instruction, Lieut. O. HUFF, Castell.

Utah

To Camp Cody, N. M., base hospital, Capt. E. DORLAND, Devils Slide.
To Camp Fremont, Calif., base hospital, Capt. E. S. BUDGE, Logan.
To Fort Oglethorpe for instruction, Lieut. C. J. NEILSON, Salt Lake City.
To Fort Riley for instruction, Lieut. N. J. REES, Nephi.

Vermont

To Fort Oglethorpe for instruction, Capt. J. S. KING, St. Albans; Lieuts. J. R. GRIMES, Montpelier; M. P. STANLEY, White River Junction.

Virginia

To Fort Oglethorpe for instruction, Lieuts. W. C. ADKERSON, J. W. DEVINE, Lynchburg; V. B. HIRST, Purcellville; J. BEAR, Richmond.

Washington

To Camp Lewis, Wash., base hospital, Lieut. C. S. PASCOE, Tacoma.
To Fort Oglethorpe for instruction, Capt. U. M. LAUMAN, Randle.

West Virginia

To Camp Hancock, Ga., Capt. L. T. VINSON, Huntington.
To Fort Oglethorpe for instruction, Lieut. L. J. LANICH, Kemptor.
To New Haven, Conn., Yale Army Laboratory School, for instruction, Lieut. D. H. HILL, Charleston.

Wisconsin

To Fort Oglethorpe for instruction, Capt. H. A. RICE, Gays Mills; Lieuts. G. T. HEGNER, Appleton; W. C. ROTH, Franksville; C. W. LOCKHART, Mellen.
To Fort Riley for instruction, Lieut. V. E. EKBLAD, Superior.

Wyoming

To Fort Oglethorpe for instruction, Capt. G. M. ANDERSON, Casper.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ILLINOIS

Laboratory of Hygiene.—One of the new features of the Public Health exhibit at the State Fair this year is that of the State Hygienic Laboratory, which is in charge of Martin Duprey.

Personal.—Mr. Joseph Purvis, superintendent of the West Suburban Oak Park Hospital, has been appointed hospital superintendent for the American Red Cross, and will be placed in charge of one of the base hospitals in France.

Illegal Practitioner Sentenced.—Mr. Leo Brodowitz, who was arrested by the Department of Registration and Education for practicing medicine without a license, was found guilty in the county court of St. Clair County and sentenced to be confined in the St. Clair County jail for six months. When he has served his sentence, he will be turned over to the authorities of Kane County.

Infantile Paralysis.—Three deaths have occurred at St. Charles from infantile paralysis, and all children under 16 years of age have been ordered to be quarantined in their homes.——The opening of the schools of Winnetka will be delayed one week on account of the presence of infantile paralysis in that suburb. Four cases have been reported in the territory surrounding Winnetka, during the last two months, with one death.

Typhoid Fever.—The threatened typhoid fever epidemic at Wheaton is believed to have been checked. The disease was traced to a woman, a typhoid carrier, on a dairy farm near Wheaton. Within two weeks sixteen cases of typhoid fever had developed in the city.——Typhoid fever is reported to be epidemic at Rock Island, Moline, Joliet and Jacksonville. In one block in Joliet there have been seven cases of typhoid, traceable to the use of water from three wells which have now been condemned.

Chicago

Personal.—Drs. Leslie D. Dougherty and Benjamin Feltenstein, while proceeding in an ambulance to the relief of those injured in the recent bomb explosion at the Federal Building, were injured by a collision between the ambulance in which they were riding and a street car.——Col. Frank Billings sailed recently for duty overseas to study problems of reconstruction surgery. He will probably return after a few months to supervise the work of his division in this country.

INDIANA

Children's Clinic.—A children's clinic, under the auspices of the Child Welfare League, has been established at Fort Wayne, and is open each Wednesday morning, between 9 and 11 a. m. Furniture and supplies for this clinic have been donated by physicians, other individuals and firms of Fort Wayne.

Hospital Notes.—The Marion County Council has given assurance that an appropriation of $100,000 will be made for additional buildings and improvements at the Marion County Tuberculosis Hospital.——The commissioner of Madison County has purchased the Beachler Farm, near Moss Island, to be utilized as a site for a tuberculosis hospital. The purchase price agreed on was $92,000 for the tract of 9 acres.

Action on Venereal Diseases.—According to a new rule just adopted by the state board of health, persons afflicted with venereal diseases will not be permitted to travel from one place to another in Indiana unless they obtain a permit from the local health officer or from the state health commissioner. On arrival at their destination they must report to the health officer at that point and be subjected to proper supervision. The permission to move from one place to another will not be given unless circumstances are "urgent and legitimate."

Personal.—Dr. Herbert T. Wagner, Indianapolis, left, September 10, for foreign service with the American Red Cross. Dr. Amelia R. Keller, Indianapolis, has been appointed a member of the Board of Trustees of the Indiana Girls' School at Clermont.——Dr. William H. Foreman, Indianapolis, has been appointed resident medical director of the State Hospital, to succeed Dr. Guthrie H. Wisener, Indianapolis, who has resigned to enter the United States Public Health Service.——Dr. Theodore F. Wood, Angola, while handling a colt was thrown, and his hip was either dislocated or fractured.——Dr. Paul E. Bowers, Michigan City, has been appointed assistant surgeon of the California Soldiers' Home.——Dr. Uberto H. Merson, Anderson, has been appointed deputy health commissioner of Anderson, to succeed Dr. John C. Armington, Anderson, who has resigned to enter the military service.——Dr. Herman G. Morgan, secretary of the board of health, Indianapolis, has been appointed as acting assistant surgeon in the United States Public Health Service, to have charge of sanitary regulations at Fort Benjamin Harrison and vocational training camps in Indianapolis.——Dr. John K. Kingsbury, Indianapolis, is suffering with a severe injury to his eyes caused by the explosion of chemicals.

IOWA

Personal.—Dr. Charles M. Hazard has resigned as mayor of Arlington to enter the military service.——Dr. George P. Neal is said to have entered suit against the mayor and members of the city council, as members of the board of health, of Fort Madison, claiming $4,178 as due to him for services rendered during a smallpox epidemic in the city two years before.——Lieut.-Col. David S. Fairchild, Clinton, has been appointed chief surgeon of the 42d or Rainbow Division, A. E. F.——Dr. Delos N. Reeve, Allison, is reported to be seriously ill and under treatment at the hospital at Waverly.

Infantile Paralysis.—On account of the prevalence of infantile paralysis at Wilton, the entire town has been placed in quarantine with orders to isolate every child under 16 years of age at its home. At present five cases of the disease have been reported.——Two cases of infantile paralysis are reported at Lattners.——The state board of health has received reports of three cases of infantile paralysis from Bellevue.——In all 110 cases of infantile paralysis have been reported thus far this year to the state board of health.——A second case of infantile paralysis in Sioux City was reported, August 14.

MARYLAND

Hospital for Curtis Bay.—As a result of the success of a campaign of only a week, funds have been secured for the erection of a hospital at Curtis Bay. Work on the institution will be started immediately. More than $11,000 of the $50,000 needed has been subscribed and two sites have been offered.

Personal.—Col. John M. T. Finney, Baltimore, who returned to this country early in August on a special mission, has again sailed for France to assume his duties as chief consultant surgeon of the American Expeditionary Forces in France.——Lieut. Charles A. Waters, M. C., U. S. A., who recently returned to this country after fourteen months' service with the Johns Hopkins Base Hospital in France, will leave shortly for Fort Oglethorpe, Ga., where he will be an instructor in the roentgen-ray division of that cantonment. He expects to return to France later.——Dr. Harry G. Johnson, superintendent of Sydenham Hospital, Baltimore, has resigned his position to enter military service.

MINNESOTA

Typhoid at State Hospital.—An outbreak of typhoid fever has occurred at the Rochester State Hospital for the Insane. Thirteen cases have thus far been reported, including twelve patients and one nurse. The 1,300 patients and all employees have been inoculated against typhoid.

Infantile Paralysis.—Infantile paralysis is said to be on the increase in Spring Grove, where 16 cases have already been reported.—The city health department of Minneapolis placed under quarantine three cases of poliomyelitis, August 28. It is believed the patients in each case contracted the disease outside of the city.

Protective Association Organized.—The physicians and dentists of Dodge County met at Dodge Center, August 16, and organized the Physicians and Dentists Protective Association of Dodge County. The purpose of the association is to shorten the terms of credit and for the mutual protection

against slow-paying patients. Dr. Carl L. Nelson is secretary of the association.

Teaching Fellowships.—The Medical School of the University of Minnesota is offering teaching fellowships for graduate work in internal medicine, surgery, obstetrics, pediatrics and ophthalmology and oto-laryngology. These fellowships cover a period of three years' study and lead to the Doctor's degree in Science or Philosophy. They are under stipends of $500, $750, and $1,000 for each of the successive years.

State Society Meeting.—At the annual meeting of the Minnesota State Medical Association at Duluth, August 28 to 30, under the presidency of Dr. Arthur J. Gillette, St. Paul, Minneapolis was selected as the place of meeting for 1919, and Dr. George D. Head, Minneapolis, was elected president, and Dr. Earle R. Hare, Minneapolis, secretary, succeeding Dr. Thomas S. McDavitt, St. Paul, who has served for several years in this office.

Mothers Should Nurse Their Babies.—Considering the facts that the death rate of infants of less than one year is considerably more in infants artificially fed, and that the health and well-being of infants under one is dependent in a great measure on proper nursing at the breast, the state board of health and state board of control have jointly adopted resolutions providing that no patient shall be received by any person, or at any hospital or institution licensed by or under the supervision of either board on any basis other than that the mother shall nurse her own child as long as she shall remain under the care of the said person, hospital or institution, providing that when nursing by the mother is an impossibility for any physical reason, exception to the rule may be made by the boards, acting on proper medical advice.

MISSISSIPPI

Personal.—Dr. Willis Walley, Jackson, for four years sanitary inspector for Mississippi, has been appointed superintendent of the State Charity Hospital, Jackson, succeeding Dr. L. S. Rogers, who has resigned to become candidate for state treasurer.

Advisory Board Conference.—A conference of the Medical Advisory Boards of South Mississippi was held at Hattiesburg, August 31, to discuss methods of increasing the efficiency of the draft boards of the state, in order that the percentage of rejections at mobilization camps be reduced.

MISSOURI

Personal.—Dr. Milton P. Overholser, Harrisonville, who has been ill in St. Mary's Hospital, Kansas City, on account of septicemia, due to a carbuncle, is reported to be convalescent.——Dr. Alonzo L. Carpenter, Joplin, has been appointed coroner of Jasper County, succeeding Dr. Robert M. James, resigned to enter the military service.——Dr. Martin C. Woodruff, chief diagnostician of the health department of St. Louis, has been placed in charge of the field work of the Red Cross Medical Commission in Italy and will sail this month.——Dr. Charles R. Johnson, superintendent of the Leeds Hospital and physician-in-charge of the Contagious Disease Department at the Kansas City General Hospital, is said to have been removed from office by the health board, August 13.——Dr. Willis V. Smith, Kansas City, is said to have been arrested, charged with selling drug prescriptions to addicts.

NEBRASKA

Scarlet Fever.—The ban placed on public meetings in July, in Fairbury, on account of scarlet fever has been removed. Since the epidemic 350 houses have been quarantined, and six deaths from the disease have occurred.

Northwest Physicians Meet.—An adjourned session of the Northwest Nebraska Medical Society was held at Long Pine, August 16, at which the following officers were elected: President, Dr. Charles C. Root, Bassett; vice presidents, Dr. Hosea J. White, Ainsworth; secretary, Dr. James M. Tische, Wood Lake, and treasurer, Dr. Thomas J. Lawson, Long Pine. It was decided to eliminate the semiannual session, as so many of the members of the association are away on military service.

Personal.—Dr. Henry J. Lehnhoff, Lincoln, has been appointed a member of the advisory board of the state board of health to succeed Dr. Joseph J. Hompes, Lincoln, who has resigned to enter the military service.——Dr. L. B. Pilsbury, Lincoln, superintendent of the Nebraska State Hospital for Insane, Lincoln, has resigned to enter the military service, and has been succeeded by Dr. James D. Case, Lincoln, who has been appointed acting superintendent.——Dr. Frank S. Marnell, Lincoln, assistant superintendent of the Nebraska State Hospital for Insane, Lincoln, has resigned to accept a position in the state hospital, Stockton, Calif.——Dr. Newell Jones, Omaha, has been appointed surgeon to the American Red Cross and will soon go to France with a hospital unit.

NEW YORK

New York City

Influenza on Liner Fatal.—A liner arriving at an Atlantic port was detained several hours owing to an outbreak of influenza. The vessel left France, August 24, and during its voyage had twenty-five cases of Spanish influenza on board, two of which proved fatal. Those showing symptoms of the disease were taken to a local hospital for further observation.

Special Course for Laboratory Assistants.—New York University and Bellevue Hospital Medical College, together with other medical schools throughout the country, began, September 3, a special three months' course in bacteriology to train laboratory assistants for immediate war service. These courses have been instituted at the request of Surgeon-General Gorgas, and have been arranged by Dr. William H. Park and Dr. Anna W. Williams.

Public Health Committee Advocates School Lunches.—The Public Health Committee of the New York Academy of Medicine has issued a statement on the value of school lunches which calls attention to the large percentage of undernourished children in our population and the reasons for this phenomenon. It has been proved in this city and elsewhere that in groups children will much more readily eat food to which they have not been accustomed. Peculiarities of taste and racial customs are readily overcome through the stimulation of group feeding, the children eating the new foods with relish. Herein lies the educational value of the so-called school lunches which in many cities of our country and in other countries have proved to be of genuine benefit to the children in a great variety of ways. The statement includes a demand that the plan of furnishing school lunches be extended, and that instead of being, as hitherto, a private philanthropy the city government should institute this important service with the opening of the new school year.

NORTH CAROLINA

Full-Time Health Officer.—Wayne County has recently arranged for the services of a full-time health officer. This is the tenth county in the state that has come into line.

Personal—Dr. William T. Rainey, Salisbury, who has been under treatment in Baltimore for several weeks on account of injuries which he sustained in an automobile accident last spring, has returned, greatly improved in health.

Campaign for Orthopedic Hospital.—Citizens of Gastonia have recently inaugurated a campaign to secure an additional $20,000 for the building of the North Carolina Orthopedic Hospital, a charter for which was granted at the last session of the legislature.

PENNSYLVANIA

Philadelphia

Personal—Dr. Frank C. Hammond, president of the County Medical Society, has been commissioned a major as medical aide to the governor, to succeed Dr. Edward P. Davis, who recently resigned.

Alcoholism Decreasing.—According to the monthly report of Dr. Joseph C. Doane, resident physician of the Philadelphia General Hospital, the number of patients in the hospital during the month of August reached 1,537, as compared with 2,200 in the corresponding month of last year. In the alcoholic wards, there were twelve patients, as compared with 175 for the month in 1917. During the entire summer there have been but two cases of delirium tremens, as compared with twelve last year.

Volunteers for Hospital Work.—A call to patriotic men and women to volunteer services and relieve a serious situation caused by the labor shortage has been made by the Pennsylvania Hospital. Not only has this hospital lost 75 per cent. of its medical and surgical staff for service overseas, but also employes have left other departments to obtain situations in plants turning out government work. Orderlies, porters, cleaners, kitchen help, firemen and others, necessary to the maintenance of hospital work, are all greatly needed.

Physicians to Aid Municipal Court.—A department of diagnosis under the direction of Dr. Charles B. Penrose will be used henceforth in the administration of justice in the Munic-

ipal Court. Associated with Dr. Penrose will be Drs. Daniel J. McCarthy, Charles S. Potts, Seymour W. Ludlum, John C. Da Costa, Jr., Frank W. Swallow, John M. Baldy. Restoration of the "misfits of society" who come before the court is planned through the organization of the staff of consulting physicians who will visit the department of diagnosis and examine such patients. These cases will include child delinquency, abandonment of children, nonsupport, incorrigibility, street walking and crime. The new department will coordinate with the medical and psychologic work of the court.

VIRGINIA

Smallpox.—The smallpox epidemic in Leesburg and vicinity has been checked by radical measures. All churches and moving picture theaters are closed and all public gatherings prohibited.

Personal.—R. D. Caldwell has been appointed assistant bacteriologist of the Richmond Health Department, succeeding Miss Margaret McCluer, who recently resigned to take up special war work at Westhampton.——Dr. Peyton M. Chichester, Bethesda, Md., has been appointed acting medical inspector in the health department of Richmond, succeeding the late Dr. Lucien Lofton, Emporia, Va.——Dr. J. E. Hendrickson, Newport News, has been elected senior vice-commander of the Spanish-American War Veterans of Virginia.

WASHINGTON

Increase in Health Budget.—The health department of Spokane has asked for an appropriation of $10,050.50 greater for 1919 than for 1918. The increase is due to the increased activities of the health department during the year.

Correction of Minor Defects.—Dr. James Carroll, Tacoma, has undertaken the work of preparing young men who have attempted to enter the military service, but through some physical defects have been rejected, so that they may be accepted for service.

Personal.—Major Horace J. Whitacre, M. C., U. S. Army, Tacoma, has been appointed director and chief of staff of the Evacuation Hospital Unit, now training at Camp McPherson, Ga., and will soon be sent to France.——Dr. William D. Kirkpatrick, Bellingham, will soon sail with a medical unit for Russia.——Dr. John S. McBride, city health commissioner of Seattle, has been commissioned Lieutenant-Commander, U. S. N. R. F., and directed to organize Naval Base Hospital No. 17. The chiefs of the section are as follows: Lieutenant-Commander, John S. McBride, director and chief of the surgical section; Lieut. George A. Dowling, Seattle, chief of the medical section; Lieut. Jay T. Dowling, Seattle, chief of the eye, ear, nose and throat section, and Dr. Jonathan E. Henry, Tacoma, chief of the laboratory division.

CANADA.

Resolution by Medical Association Against Alcohol.—At its recent meeting the Manitoba Medical Association entered a resolution in the minutes of the society that the restrictions placed on the sale and use of alcohol in that province had resulted in the moral, physical and economic betterment of the people.

Nurses to Affix R. N. to Names.—In the province of Ontario, Manitoba, Saskatchewan, and Alberta, nurses are now authorized by law to affix R. N. to their names, if they have graduated from authorized hospitals and have satisfied all the requirements of the respective laws made on the subject of registration of nurses.

Canadian Scale of Pensions.—The Canadian government established in October, 1917, a scale of pensions: Total disability, $600; widows, $480; parents, $480; children, $96; orphan children, $192; special allowance for helplessness, not to exceed $300; number of classes of disability, 20 and gratuity. There are twenty-two physicians on the pension board at Ottawa; and the average number of pensions issued totals 120 per day.

Clinic Conducted at London, Ont.—Dr. Thomas McCrae, head of the Jefferson College of Medicine, Philadelphia, recently conducted a clinic at the Western Ontario School of Medicine and Victoria Hospital, London, Ont.; 175 medical men from the western part of Ontario attended. The clinic demonstrated the newer methods of treatment of diseases of the heart, kidneys, joints, and blood. London plans to hold four clinics a year and will endeavor to bring to that center medical authorities of high international reputation.

Work of the Khaki University.—President Sir Robert Falconer of the University of Toronto is in England, engaged in teaching in the Khaki University of Canada. This institution, which has been established in connection with the Canadian forces overseas, is designed for assisting those soldiers who wish to continue their studies in commercial subjects, agriculture, engineering and general education. Ninety-three libraries have been established in Army areas in England and France. The teaching is done entirely by voluntary instructors.

New Training Centers for Nurses Established.—The Victoria Order of Nurses have four training centers in Canada—Montreal, Ottawa, Toronto, and Vancouver, B.C. As there is a very great shortage of nurses in western Canada, it is proposed to establish various centers in the three western provinces of Manitoba, Saskatchewan and Alberta. Those entering the Order must be fully qualified nurses and must take the special six months' course of the organization, which consists in district work, school work, child welfare, social service and public health.

Vital Statistics of Winnipeg.—According to the semiannual report of Alexander J. Douglas, medical health officer of Winnipeg, the population of the city has begun to increase again after a decline during three years, brought about by the war. For 1918 the population is 183,600 as against 182,850 for 1917. There was a decline of over 17,000 in 1917 notwithstanding a surplus of births over deaths of nearly 4,000. For 1917 the natural increase was 3,718. Marriages also showed an increase from 1,158 in the first half of 1917 to 1,212 in the first half of 1918. The number of marriages had declined from 1913 to 1917. The death rate for the first half of 1917, as well as for 1918, was about 10.41 per thousand inhabitants.

GENERAL

Meeting Postponed.—The Ohio Valley Medical Association, which was scheduled to hold its twentieth annual meeting at Evansville, Ind., November 12 and 13, has decided to postpone the meeting indefinitely because of war conditions.

Bequests and Donations.—The following bequests and donations have recently been announced:

Lyons (N. Y.) Home for Crippled Children, $2,500; Industrial Home for Crippled Children, $2,500, and Homeopathic Hospital, New York City, $5,000, by the will of Alphonse Alfred Galot.

Corning Hospital, Corning, N. Y., the principal of a trust fund amounting to several hundred dollars on the death of the beneficiary, by the will of Ethelaide Bump.

Germantown Dispensary and Hospital for free beds in memory of Frederick J. Kimball, Eliza M. Needles and William M. Needles, $15,000, by the will of Helen M. Hathaway Graffin.

American Red Cross, the estate of Charles S. Kahn, Evansville, Ind., valued at more than $100,000.

Tri-State District Society.—The Tri-State District Medical Society of Illinois, Iowa and Wisconsin has been incorporated, with headquarters in Freeport, Ill. Drs. Karl F. Snyder and William B. Peck, Freeport, are trustees. At the recent meeting of the association at Madison, in addition to the officers elected at the quarterly meeting, the following officers were elected: Vice presidents, Drs. Henry G. Langworthy, Dubuque, Iowa; Charles R. Bardeen, Madison, Wis., and Walter B. Helm, Rockford, Ill., manager and director, Dr. William B. Peck, Freeport, Ill., and secretary-treasurer, Dr. Domer G. Smith, Freeport, Ill.

Meeting of Food Control Association.—At the twenty-second annual meeting of the Association of American Dairy, Food and Drug Officials, held recently in Chicago, new officers were elected and resolutions were adopted setting forth the unnecessary waste in collection and shipment of cream for manufacturing purposes, renewing their pledge to support and assist the United States Food Commissioner, endorsing the existing association of food manufacturers and advocating more complete organization of their forces, and admitting to membership on the joint committee on definition and standards only members who have no financial interest in dairy, food or drug products.

Regulations on the Use of Paper.—The Paper Division of the War Industries Board has for some time been securing data concerning newspapers and periodicals, especially relative to the amount of paper used. Now, in the interest of the economic use of paper, but primarily for the conservation of fuel, certain definite regulations have been made by this board governing the use of paper. One of the regulations provides for a maximum weight of paper used in periodicals. This maximum will make it necessary for THE JOURNAL to use slightly lighter paper. The reducation in weight will not be apparent to the casual reader. As THE JOURNAL has a considerable amount of paper on hand, the lighter stock will not be used for some weeks. The important regulations are

the following: (1) against continuing subscriptions after date of expiration; (2) against the sending out of complimentary copies; (3) against sending more than one copy to advertisers; (4) against sending sample copies to stimulate circulation or advertising, except under special permit; (5) against exchanging with other journals; (7) against selling at an exceptionally low or nominal subscription rate. It is suggested to publishers that they economize if possible "by cutting the number of pages, the curtailment of circulation, or in any other way publishers choose." Finally, each periodical is requested to reduce the total tonnage to what amounts to about 15 per cent. These various regulations will not affect THE JOURNAL seriously, except that the number of pages in each issue will have to be kept down to the minimum, and complimentary copies cannot be sent even to other medical journals in exchange.

FOREIGN

Election in Netherlands Cancer Research Society.—The address of the secretary of the Nederlandsch Kankerinstitut is Prof. J. J. van Loghem, Rokin 62, Amsterdam. Prof. J. Rotgans is president, and the directors include Drs. Delprat, de Josselin de Jong and Westerman, and Profs. B. J. Kouwer and Pekelharing.

Floods Exterminate Bilharzia.—The *Nederlandsch Tijdschrift* quotes the *Medical Journal of South Africa* to the effect that the recent inundations in southern Africa have had the unexpected result of apparently clearing out the bilharzia. The parasitologist, A. P. Fantham, was unable to find any specimens of bilharzia after the inundation had subsided, even in regions previously densely infested. The larvae of mosquitoes and flies were also swept away to a large extent.

Military Medical Journal.—The authorities in Italy have been publishing for over a year a medical-surgical review of French, English and American publications on medical and surgical subjects bearing on the war. It is distributed to every member of the profession that has been mobilized in Italy. The *Policlinico* comments on the fact that a new journal was founded for the purpose instead of adapting the *Giornale di Medicina Militare* which has been published for fifty years under the aegis of the war department.

Deaths in the Profession Abroad.—S. Talma, professor of internal medicine at the University of Utrecht, pioneer in the study of the collateral circulation with liver disease, and means to promote it by a simple operation; also in the study of gastric ulcers as a consequence of severing the vagus, aged 70.——**G. Guarnieri,** professor of pathology at the University of Pisa, known for his researches on smallpox.—— Our Paris exchanges mention the death from "fulminating grippe" of Drs. **J. Labouré** of Amiens, and **S. Burnier,** the former a well known writer on his specialty, the ear and throat.

Children's Outings in the Netherlands.—The arrangements for providing city children with outings in the country—being given a home for two weeks or more in some country family —is assuming such proportions that a bulletin is now issued to supply information to all desiring it. It is sent to every one interested in receiving or placing the children, organizing local committees for the purpose, etc. It tells what the children should take with them, the food that should be given them, and other details, and stimulates families to aid in the work. Doctor Dekker, Statenlaan 70, 's-Gravenhage, is the moving spirit of the whole undertaking.

Health Insurance in Germany.—The *Nederlandsch Tijdschrift* quotes a German exchange to the effect that the Leipzig Ortskrankenkasse has raised the remuneration of its medical officials per insured (the *Pauschalsumme*), from 7.75 marks to 8.50. This is an increase of 11 per cent., and the organ of the insurance companies expresses surprise that the physicians are content with such a moderate raise, especially in Leipzig, the home of the Leipziger League. The *Tijdschrift* remarks parenthetically that the original 7.75 marks (a little less than $2), is a trifle more than the corresponding remuneration in the Netherlands. In Berlin it is announced that all hitherto existing contracts are to be canceled Jan. 1, 1919.

The Profession in Germany After the War.—The representative annual gathering of the profession in Germany, the *Aerztetag,* held recently at Eisenach, discussed among other subjects the return home of physicians after the war. It was voted to appeal to the authorities to demobilize first the older physicians, the fathers of families, the married, and those who have been longest in the service; also that the returning physicians should be given some military post of some kind in the locality where they lived before the war; that posts of assistants should be held open for returning physicians; that opportunity should be offered the medical men who have been working in the field to obtain postgraduate instruction free of charge; that crippled and invalided physicians should be looked out for; that instruments and vehicles which may be released by the demobilization should be offered for sale to physicians at moderate prices, without intervention of middlemen; that physicians also should be given the right to benefit from the war loan fund; that medical instruction and practice should be restricted for aliens, especially in watering places, and that placards should be distributed urging patients to return to their former physicians. According to the present plans of the government, only from 5 to 10 per cent. of the population will be left outside the compulsory sickness insurance system. The *Nederlandsch Tijdschrift* quotes further a German account of Struve's appeal to the Reichskanzler to provide ways and means to avert the dangers that threaten the members of the profession when the war closes. In sharp contrast to these dangers, he emphasized, stand the large incomes that the men who have stayed at home have been receiving. At Chemnitz, for instance, physicians who formerly made 4,000 to 9,000 marks a year, have been getting 9,000 to 16,000 marks. At Gera, the incomes of the insurance physicians have run up to 38,000 marks. The "insurance kings," however, are at Essen, where one has had an income of 61,500 marks, another of 50,000, several others approaching this, and twenty-four have had incomes between 20,000 and 29,040. The 175 physicians in the Essen district have been getting on an average from the insurance companies 12,000 marks (about $3,000). In the Netherlands, our exchange remarks, the number of patients that the insurance physician can treat is limited by the regulations, but this is not the case in the above places, and the payment is by the individual service rendered.

The Council on Pharmacy and Chemistry and the Patriotic Medical League in Italy.—The Unione dei Medici Italiani per la Resistenzia Nazionale was organized mainly to combat enemy propaganda, but it has enlarged its scope to include all kinds of welfare work for the country itself. Some of its activities were mentioned recently by THE JOURNAL. It publishes a small weekly to outline and insure concerted action. Recent issues have been devoted mainly to discussion of ways and means to promote the domestic production of drugs which have hitherto been imported. In the issue for July 7 the work of the Council on Pharmacy and Chemistry of the A. M. A. is described in detail, with translated reproductions of a number of the reports published by the Council in the Propaganda Department of THE JOURNAL. They are translated into Italian as also some of the pages of N. N. R. Among the reports cited are some on Ambrine, Radio-Rem and Pertussin. The description of the work of the Council is by Dr. V. Ronchetti, physician in chief of the Ospedale Maggiore of Milan. The question of supervision of pharmaceuticals is one of the leading topics being discussed by the league, and Ronchetti refers to the work of the Council on Pharmacy and Chemistry to show, as he says, what is being done in the United States in this line, "in a truly admirable, simple and practical manner."

He comments on the reports reproduced, saying, "No one can fail to see the great usefulness of such reports brought within reach of physicians in one of the most widely circulated journals. It is true that in Italy there already exist some institutions for official control of the production of chemicals and pharmaceuticals, but as they are, at present, they do not satisfy either the manufacturing chemists or the medical profession. . . . In reality our institutes fail to satisfy the producers because too often the visit of inspection to the factories and pharmacies is reduced to an empty bureaucratic formality, and the manufacturers do not feel effectually protected against the eventuality of disloyal competition. The institutes fail to satisfy the physicians because the deliberations, the verdicts, etc., which are issued from these supervising institutes never appear in widely circulated medical journals. There is never a trace of them in the medical journals commonly read. The practitioner learns to know the new pharmaceuticals only from the literature advertising them, sent out by the firm which produces them. Rarely indeed can he find serious, reliable articles referring to them in the accessible literature at his disposal. As to the certificates, often so numerous as to fill entire pamphlets —no one takes them seriously nowadays—not even the signature of a well known name. In fact, institutions grow old and outlive their usefulness, like human beings and, for this reason, an age limit is imposed by Nature if not by the laws.

When they reach this, the best they can aspire to is a jubilee celebration. Instead of repairing and propping up old tottering institutes, it is better to found new ones. This, it seems to me, for obvious reasons cannot be left to private initiative. It should not be a difficult matter to coordinate certain departments in different universities to form the nucleus for an *instituto di controllo* for medicinal products —an institution which would serve as a guarantee for the sick, as a guide for the manufacturing chemists in their production, and for physicians in their application of the products."

SOUTH AND CENTRAL AMERICA, MEXICO AND WEST INDIES

Buenos Aires Election.—The Sociedad de Obstetricia y Ginecologia recently elected its officers for the 1918-1920 term: president, Dr. T. J. Piccardo; vice president, Dr. J. C. L. Massini; secretary general, Dr. A. Frers, and recording secretary, Dr. F. R. Pasman.

Medical Bibliography of Argentina.—The classified titles of all medical works published by Argentine physicians during the years 1915, 1916 and 1917 is soon to be issued. It is proposed to publish similar volumes periodically to record the entire medical bibliography of the country. The work is in charge of Dr. M. A. Blanco, and the first volume, now on the press, opens with a historical sketch by Dr. J. Tumburus, librarian of the medical department of the university.

The Venezuela Academy of Medicine.—The retiring president of the Academia Nacional de Medicina, Dr. F. A. Risquez, founded a prize of 500 bolivars ($100) to be awarded biennially for the most useful work on tuberculosis, based on personal studies and observations. In case no work is deemed worthy of the prize, the sum can be awarded to the physician who has distinguished himself by his efforts on behalf of the *union y cordialidad* of the medical corps. Lacking a candidate of this kind, the prize money can be applied for the library of the Academia. The Vargas prize for 1917 was awarded to Dr. J. R. Risquez for his work, "Bilharziosis Mansoni in Venezuela," and, for 1918, to Dr. E. Tejera for his work on "American Leishmaniosis in Venezuela." The officers elected for the coming two years are: president, Dr. D. Lobo; vice presidents, A. Ayala and J. D. Villegas Ruiz; perpetual secretary, Dr. L. Razetti who is also director of the *Gaceta Medica*, the official organ of the Academia, associated with Dr. A. Ayala as *secretario de redaccion*.

LONDON LETTER

LONDON, Aug. 13, 1918.

Medical Schools in the Armies in France

It is not generally realized how much education is going on in our armies in France—education not only in the art of war but in fitting men for careers in civil life. An important new departure has been made in the medical service by the provision of instruction in the work required in front line areas. Workers in these areas are put in touch with any knowledge gained at bases or elsewhere that can be useful to them. Gaps that exist in the military education of the large proportion of the existing medical officers are filled, and they are furnished with a wider view of the aims of military medicine than they can gain in their own military formation. The schools are not confined to the Royal Army Medical Corps but include colonials, Americans and Portuguese, combatants and noncombatants. Those who attend from the R. A. M. C. are drawn mainly from regimental medical officers and from field ambulances and sanitary sections, with a smaller proportion of officers belonging to casualty clearing stations. The pupils from combatant units are usually platoon officers, stretcher bearers and members of regimental sanitary squads, with a few men training as regimental chiropodists. In dealing with the combatant classes the chief aim is to make them conversant with the best ways of rendering first aid and to impress on them the value of sanitation and how it can be best secured. The special lectures for medical officers deal with new developments of the medicine and surgery of war. The commandant of the school is also commanding officer of the casualty clearing station in which the school does its work. The adjutant is on loan from a field ambulance, and the instructor is a surgical specialist lent by one of the less active clearing stations. Visiting lecturers who are specialists of various kinds also help. The subjects invariably taught are the application of the Thomas splint, with special reference to the prevention of shock, the application of the rifle splint, the arrest of hemorrhage, the use of the triangular bandage, and the construction and use of field sanitary appliances. In addition, all ranks take part in physical exercises and ordinary drill, and all medical officers have riding lessons and attend demonstrations of useful ways of varying the use of the foodstuffs issued as rations. These subjects are mainly dealt with by practical classes. It is now the universal practice in the British army in France in all cases of fracture of the femur, in extensive flesh wounds of the thigh, in injuries to the knee joint and in severe fractures of the upper part of the tibia to secure immobilization before evacuation from an advanced dressing station or even a regimental aid post. For this purpose the Thomas splint is considered the best, except when a fracture of the femur is complicated by an unusually extensive wound in the buttock or upper part of the thigh that interferes with the fitting of the ring. The method of application taught includes attention to the value of warmth and absence of pain in the prevention of shock, and does not involve the removal of either clothes or boots or exposure of the wound until complete immobilization is achieved. It also assumes that the operator will have not more than two assistants, and possibly only one. The principle taught is that in applying the Thomas splint in an advanced dressing station no thought should be necessary but every action automatic. To secure this result the whole process has been worked out as a drill in which the various movements are indicated by numbers. [Compare Osgood, R. B.: The Transport Splints of the American Army, THE JOURNAL, Aug. 31, 1918, p. 734.—ED.] This covers everything from the initial warming of the patient by blankets and a Primus stove to fixing the splint to a suspension bar on the stretcher and placing hot-water bottles and blankets for the journey. A man who knows the drill well can carry it out efficiently in the dark. A first call team can put up a limb perfectly in two minutes forty-five seconds.

The Museum of the Royal College of Surgeons

The annual report on the Museum of the Royal College of Surgeons shows that much progress has been made with the war collection. The opening of this important collection, which should be visited by every American surgeon who comes to London, was described in a previous letter to THE JOURNAL. The number of specimens has increased from 1,500 to 2,700. There is a Canadian section prepared by members of the Canadian Army Medical Corps. A staff of experts, under Major F. Lessore, the distinguished sculptor, has been engaged at No. 16 Canadian Military Hospital making wax and plaster models, colored drawings and colored photographs of wounds and war deformities. It is hoped that Australian and New Zealand sections will be added, for all the dominions are contributing specimens with the view of building up army medical museums for their own countries. Canadian specimens have already been dispatched from the museum to Montreal. The Australian Medical Corps has given the museum staff assistance in dealing with specimens from Australian hospitals. To the general museum important additions, pathologic, teratologic and physiologic, have been made. Mr. Alban Doran has made considerable progress with a new descriptive catalogue of the surgical instruments in the possession of the college. The descriptive catalogues of the obstetric and gynecologic instruments in the museum, as well as of the surgical instruments which were the property of Lord Lister, have been completed, as also that of the instruments of John Hunter and other hunterian relics.

Fat Rations for Jews

The Ministry of Food has made arrangements for the provision of kosher margarin for Jews. Facilities will also be given to Jews who, for religious reasons, cannot use their lard coupons, to exchange these, on signing a form of declaration, for either half an additional butter-margarin ration or for a weekly ration of vegetable oil, the quantity of which will be announced later. The schemes of distribution for kosher margarin and for oil for Jews have been worked out after discussion with the representatives of the Jewish community. Kosher margarin is manufactured at all factories at present engaged in the production of margarin, but instead of containing 20 per cent. of animal fat, which is permitted in the standard margarin, it is made entirely of milk and vegetable products. A rabbi, or a rabbi's nominee, is always present at the process. He tests the milk that is used, and when he is satisfied that the margarin is properly kosher, he affixes his seal to the case or packet and it is issued to the trade.

The Expulsion of Enemy Members of the Royal Society

A special general meeting of the Royal Society has been called to consider the advisability of expelling enemy foreign members, and notice of the following motion to be submitted has been given by Sir George Beilby and Dr. M. O. Forster: "That, in view of the war's having continued during nearly four years without any indication that the scientific men of Germany are unsympathetic toward the abominable malpractices of their government and their fellow countrymen, and having regard to the representative character of the Royal Society among British scientific bodies, as recognized by the patronage of his majesty the king, the council forthwith takes steps necessary for removing all enemy aliens from the foreign membership of the society." Although Sir George Beilby and Dr. Forster are both members of the council, this resolution is apparently not put forward by the council officially. The notice convening the meeting states that the council had under consideration the question of expelling the enemy foreign members. They considered that, if possible, unity of action between the Allied nations should be secured, and in view of the fact that a conference between representatives of Allied academies will take place next October, they resolved to refer the question to that conference. In the meantime they desire to obtain the opinion of the fellows of the society on the subject for the guidance of their representatives at the conference, which has been called for the purpose of discussing the future of scientific work hitherto carried out by international organizations.

The Release of Medical Students from the Army for the Purpose of Study

A new army council instruction has been issued with regard to the release of medical students serving with the colors for the purpose of resuming their professional studies. A medical student now serving with the colors who at the time of his enlistment was engaged in medical studies and who (*a*) is in his third year or (*b*) at the time of enlistment had passed the whole of the professional examination in chemistry, physics and biology (or botany and zoology) for a medical degree or license is, if eligible and he so desires, to be transferred (regardless of his medical category) to the reserve, or discharged if ineligible for transfer to the reserve, for the purpose of resuming his studies with a view to obtaining a medical qualification. A third-year student is defined as one who had on or before enlistment completed two years of medical study, and who can within thirty-six months complete his professional curriculum and obtain his medical degree or license. A medical student desiring to be released from the colors must state the date on which he wishes to be released, and undertake to resume his studies with a view to qualifying. If a third-year medical student, he will be required to produce a certificate from the dean of his medical school showing (1) whether he has or has not passed his professional examination in anatomy and physiology; (2) that prior to enlistment he had satisfactorily pursued his professional studies during two years, and was then actively studying with a view to qualification, and (3) that he can qualify within thirty-six months. If not a third-year student, he must produce a certificate from his dean showing that prior to enlistment he had passed the whole of the first professional examination, and that at or immediately before enlistment he was actively pursuing medical studies and had been studying as a whole-time medical student for at least six months at a recognized medical school or college.

An American Unit for Palestine

The American Zionist Medical Unit arrived in this country and stopped in London to make final arrangements before leaving for Palestine. The party, which is in charge of Mr. Lewin Epstein, consists of forty-four persons, including fifteen physicians and dentists, twenty nurses, two sanitary specialists, and social workers and administrators. The equipment of the unit, more than 400 tons in weight, comprised a 100-bed hospital, roentgen-ray apparatus, drugs, instruments, ambulances, and clothes for the destitute (Jewish and non-Jewish) among whom it will work, and was shipped from New York direct to Egypt.

More Hospitals for Americans

To provide further hospital accommodation in this country for wounded Americans, the Army Council has arranged to take over the Southern and North-Eastern hospitals of the Metropolitan Asylums Board. The Portsmouth Corporation has agreed to hand over the local mental hospital.

Marriages

Lieut. Lauren Guy Sheets, M. R. C., U. S. Army, Cleveland, on duty at the Mayo Clinic, Rochester, Minn., to Miss Coletta M. Greulich, also of Cleveland, at Rochester, July 13.

Lieut. Erwin E. Mayer, M. C., U. S. Army, Baltimore, on duty at Camp Meade, Md., to Miss Miriam Lustig, also of Baltimore, August 22.

Capt. Walter Mansfield Scott, M. R. C., U. S. Army, Alamagordo, N. M., to Miss Annie Georgina Dickson of El Paso, Texas, August 29.

Lieut. Henry Marks Goodyear, M. R. C., U. S. Army, Morton, Ill., to Miss Gertrude Elliott of Streator, Ill., September 4.

Matthew Nicholas Tennis, Dorchester, Boston, to Miss Clara Lois Rheno of Vineyard Haven, Mass., September 3.

John I. McGonigle to Miss Lizzie E. Marsh, both of Pueblo, Colo., in Washington, D. C., August 19.

Capt. Frederick Paul Moersch, M. R. C., U. S. Army, to Miss Agnes Dries, both of Minneapolis, July 15.

Lieut. Robert Preston Henderson, Jr., U. S. Navy, to Miss Gladys Willis, both of Tampa, Fla., August 24.

John Patterson, Frankfort, Ky., to Miss Christine Marston of Owenton, Ky., August 18.

Charles Henri Leonard to Mrs. Helen Blakeslee Mann, both of Detroit, August 8.

Deaths

Daniel Worrell Jefferis, Chester, Pa.; University of Pennsylvania, Philadelphia, 1865; aged 76; a Fellow of the American Medical Association; first president of the Delaware County Medical Society, serving for more than ten years in that capacity; for three years mayor of Chester, president of the select council for several years, and for nearly a quarter of a century president of the Chester Board of Education; chief of the medical staff of the Chester Hospital; coroner of Delaware County; a veteran of the Civil War; died at his home, September 1, from heart disease.

William Francis Waugh, Chicago; Jefferson Medical College, 1871; aged 69; assistant surgeon, U. S. Navy, from 1873 to 1876; professor of principles and practice of medicine in the Medico-Chirurgical College of Philadelphia from 1880 to 1890, and in the Illinois College, Chicago, from 1894 to 1904; dean and professor of tropical medicine and therapeutics in Bennett Medical College, Chicago, from 1909 to 1913; author of several medical books; died in Chicago, September 5, from intestinal cancer.

Sidney Augustus Norton, Columbus, Ohio; Miami Medical College, Cincinnati, 1869 (Hon.); aged 83; a chemist of international repute; one of the five original members of the faculty of Ohio State University, Columbus, and emeritus professor of chemistry since 1895; author of a textbook chemistry, and a frequent contributor to chemical journals; died at his home, August 30.

Charles L. Healy, Oswego, N. Y.; Georgetown University, Washington, D. C., 1912; aged 29; a Fellow of the American Medical Association; formerly of the staff of the National Soldiers' Home, Dayton, Ohio; a member of the board of health of Oswego; died in the Oswego City Hospital, August 26, from heart disease.

William Lawton Thompson, New York City; Johns Hopkins University, Baltimore, 1904; aged 41; clinical assistant in orthopedic surgery in the Post-Graduate Hospital, and visiting physician to the Blytheville Home; died in the Post-Graduate Hospital, New York City, August 28, from nephritis.

Harry F. McKay, Portland, Ore.; Willamette University, Salem, Ore., 1895; aged 56; a member of the Oregon State Medical Association; since 1914 a member and president of the State Board of Medical Examiners; died at his home, near Lents Junction, Ore., August 23, from arteriosclerosis.

Joseph M. Topmoeller, Cincinnati; University of Munich, Bavaria, Germany, 1880; aged 63; a member of the Ohio State Medical Association, and Cincinnati Academy of Medicine; died at his home, August 26, from nervous prostration.

Alfred Rhinehart Coon, DeWitt, Mich.; University of Michigan, Homeopathic Medical School, Ann Arbor, 1912; aged 34; a member of the Michigan State Medical Society, and president of the Clinton County Medical Society in 1916; died at his home, August 22, after a surgical operation.

Alexander McL. Jeffrey, New York City; New York University, New York City, 1886; aged 58; a Fellow of the American Medical Association; a specialist on tuberculosis; died at his country home, near Croton Lake, Mount Kisco, N. Y., September 2, from cerebral hemorrhage.

Lieut. Joseph Faure Baldwin, M. R. C., U. S. Army, Tyler, Texas; Tulane University, New Orleans, 1915; aged 26; ex-intern at Touro Infirmary, New Orleans, who went to England in the fall of 1917, and was serving in a front line hospital; was killed, August 7.

Henry Granger Hanchett, Orlando, Fla.; New York Homeopathic Medical College, New York City, 1884; aged 65; for many years a resident of Brooklyn; one of the organizers of the American Guild of Organists; died in Siasconset, Mass., August 19.

Lieut. Franklin Henry Dornbusch, M. C., U. S. Army, Chicago; Loyola University, Chicago, 1915; aged 28; a Fellow of the American Medical Association; on duty at Camp Gordon, Atlanta, Ga.; died at that place, September 3, from nephritis.

Lieut. Charles Joseph Valentine Fries, U. S. N. R. F., Philadelphia; Hahnemann Medical College, Philadelphia, 1894; aged 54; who had been on duty at the Cape May (N. J.) Naval Station; died, August 30, from cerebral hemorrhage.

Rebecca Moore, Kennett Square, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1883; aged 83; for many years a practitioner of Philadelphia; died in the Friends' Boarding House, Kennett Square, August 27.

Edward Wheeler Bryan, Corning, N. Y.; Homeopathic Hospital College, Cleveland, 1873; aged 85; former health officer of Corning; a member of the medical board of Corning Hospital; died at his home, August 24.

Lieut. Charles W. Wehr, M. C., U. S. Army, Kansas City, Mo.; Kansas City College of Medicine and Surgery, 1918; aged 30; while preparing to report for duty, was seized with pneumonia, and died about August 26.

Daniel Ferdinand Kindel, Cincinnati; Medical College of Ohio, Cincinnati, 1901; aged 40; a Fellow of the American Medical Association; died in the Good Samaritan Hospital, Cincinnati, September 1.

Joseph Wallace Calvert, Bloomington, Ill.; Cleveland Homeopathic Medical College, 1896; aged 52; a member of the Illinois State Medical Society; died at his home, August 16, from pneumonia.

Harvey E. McConnell, Chester, S. C.; University of Maryland, Baltimore, 1890; aged 52; a Fellow of the American Medical Association; died at his home, August 18, from pernicious anemia.

Russell Alexander Reid, Zelienople, Pa.; Jefferson Medical College, 1901; aged 40; at one time a Fellow of the American Medical Association; also a graduate in Pharmacy; died at his home, August 27.

Kossuth T. Crossen, Albany, Ohio; Starling Medical College, Columbus, Ohio, 1900; aged 40; captain of Company K, 102d U. S. Infantry; is reported to have been killed in battle in France, July 24.

James MacKellar, Hazleton, Pa.; Medico-Chirurgical College of Philadelphia, 1891; aged 54; a Fellow of the American Medical Association; died in a hospital in Philadelphia, August 31.

Chandler Holmes Smith, Jr., Madison, Fla.; College of Physicians and Surgeons in the City of New York, 1888; aged 55; died in Madison, August 17, after an automobile accident.

Aaron J. Mathews, Thomson, Ga.; Atlanta (Ga.) Medical College, 1890; aged 50; a member of the Medical Association of Georgia; also a druggist; died at his home, August 18.

Granville S. Wellons, Barnesville, Ohio; Medical College of Ohio, Cincinnati, 1863; aged 83; surgeon of U. S. Volunteers during the Civil War; died at his home, August 25.

Alfred McGill Bolt, Roland Park, Baltimore; College of Physicians and Surgeons, Baltimore, 1881; aged 71; died at his home, August 24, from heart disease.

Franklin E. Robinson, West Newton, Mass.; Homeopathic Hospital College, Cleveland, 1876; aged 72; died at his home, August 10.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

BITRO-PHOSPHATE

Calcium Glycerophosphate at Sixteen Hundred Per Cent. Profit

Bitro-Phosphate is put on the market by the Arrow Chemical Co. of New York; it is recommended:

For neurasthenia, nervousness, irritability, depression, brain-fag, insomnia, debility, excessive thinness, general weakness, lack of physical energy and the usual ailments arising from nerve weakness and tissue wastage.

With the trade-package comes a leaflet discussing, in language that may be counted on to duly impress the unscientific mind with its profundity, "The Relation of Organic Phosphorus to the Human Machine." Numerous quotations from medical literature follow, all of which, so far as they have been checked, relate, in the original, to calcium glycerophosphate. Not that there is any hint in the advertising that this well-known drug is the preparation to which the quotations refer; the reader is left to infer that they refer to "Bitro-Phosphate."

Because of the number of inquiries that have been received, and the extensive advertising of "Bitro-Phosphate," the preparation was taken up for examination in the Association's Chemical Laboratory. The chemist's report follows:

CHEMIST'S REPORT

Bitro-Phosphate comes in the form of uncoated tablets weighing 0.355 Gm. each (about 5½ grains) and there are forty-two tablets in each package. The package sells for one dollar. The tablets, which had a somewhat bitterish saline taste and were odorless, slowly distintegrated in water but did not entirely dissolve. In dilute hydrochloric or dilute nitric acid the tablets dissolved readily with some effervescence. No chlorid, bromid, iodid, sulphate, phosphate, or hypophosphite could be detected by the ordinary tests. The solution in water or acid gave tests for calcium in abundance. The tablets on heating, gave off inflammable vapors and, when strongly heated, charred. The charred mass extracted with nitric acid gave the molybdate test for phosphate in abundance. This would indicate an organic phosphate. The U. S. P. tests for calcium glycerophosphate were applied to a solution of the tablet material in water and the tests were positive in every case. Six of these tablets when titrated by DuBois method are found to contain 1.9324 Gm. calcium glycerophosphate, or 0.322 Gm. (about 5 grains) per tablet.

The conclusion to be drawn from this examination is that Bitro-Phosphate is essentially a 5 grain tablet of calcium glycerophosphate.

Very simple! Calcium glycerophosphate can be purchased for $2.35 per pound. One pound of calcium glycerophosphate would make over thirty-three bottles of five-grain "Bitro-Phosphate" tablets, forty-two tablets to the bottle; thirty-three bottles of Bitro-Phosphate sell for $33.00! Does a profit of sixteen hundred per cent. come within the excess profit tax?

THE JOURNAL has discussed at different times the therapeutic value—or lack of value—of the glycerophosphates, and has shown the fallacy of the theory that organic phosphorus compounds are more readily assimilated than the inorganic phosphorus preparations. All that needs, further, to be said is that if the public wishes to take calcium glycerophosphate it may purchase it under its own name at a fraction of the price.

An interesting side-light on the Bitro-Phosphate business was disclosed when information regarding the Arrow Chemical Co. was sought. It seems that the Arrow Chemical Co. was started in January, 1917, by one Samuel Hugh McKean. In November, 1917, a certificate of trade-style was filed, showing that the present owner is one Elmer S. Prather, a brother-

in-law of McKean. The names of both Prather and McKean loom large in the Propaganda department's files. Prather, for some years, seems to have traveled about lecturing on "suggestive therapeutics," going under the name of "Knowles." Later he is said to have been connected with one McIntyre in operating a mail order concern known as the "Metropolitan Institute of Science," in New York, which had the following officers:

F. T. McIntyre, D.S.T., President.
Prof. Elmer E. Knowles, Vice-President and Treasurer.
J. Alfred Moore, M.D., Corresponding Physician.
S. H. McKean, Secretary.

This institution sold "courses" in "Hindoo Methods of Hypnotism" and "Telepathy," also a "Complete $30 System of Personal Influence and Control, for $5.00"—to say nothing of the "Hypnotic Ball System." Finally the postoffice department got around to the "Institute" and it went out of business. This was in 1906. In 1909, "Elmer E. Knowles" was "president" of the "Psycho Success Club," which was operated from 400 St. Nicholas Ave., New York. This was the "most powerful mental organization the world has ever known"—Prof. Knowles said so. Those who sent in $1, or $5, or $10 (according to the ease with which the fool and his money were parted), for membership in this club, had to "pledge not to reveal the Mystic Formula or Harmony Key to any person who is not a member in good standing."

Those whose names got on the "Psycho Success Club" "sucker list," and who failed to "bite," received, after some months' time, a circular letter from the "Roxroy Studios," operated, not from New York, but from London, although the advertising was obviously for American consumption. Enclosed with the Roxroy letter, which by the way, offered an "extensive life reading" for a mere $2, was an advertising leaflet of the "International Institute of Beauty Culture," of 2236, 8th Ave., New York. It should also be said that those who received the follow-up system of the "Psycho Success Club" also got advertisements from the "Economy Supply Co." of 203 St. Nicholas Ave., New York, as well as a list of "Mrs. Knowles' Home Remedies," that were put out by the "Imperial Products Co." of 205 St. Nicholas Ave., New York. Failing to be caught by any of these, there came a letter, simulating a personal communication, from the "Universal Mail Order Institute," 2232, 8th Ave., New York, signed "Hugh McKean, Proprietor." This offered a "complete course on 'How to Conduct a Mail-Order Business,' and in addition, the 'Twenty Money-Making Ways.'"

In 1912 Prather seems to have been running a "school of hypnotism" in London. At that time London *Truth* (which delights in exposing shams and humbugs) had this to say about the concern:

"Prather has recently come to London and opened a National Institute of Sciences in the Westminster Bridge Road, No. 258, over a tea shop. His expert figurehead rejoices in the name of Professor Elmer E. Knowles, and his advertisements announce that the National Institute has appropriated five thousand pounds towards a fund for the free distribution of the professor's new book, "The Key to the Development of the Inner Forces." . . . Prather makes a great to do about a Radio-Hypnotic Crystal, which cannot be so very active, since any one who calls at the National Institute can see two girls packing hundreds of them in boxes all day long just as if they were bits of glass, and seemingly none the worse for the experience. Prather charges twenty shillings for a six pound course of his instruction, with the crystal thrown in. . . . However, if any one really wants to be hypnotized either by advertisement or by post, a pound or two either way is of very small moment. It is not like being hypnotized on a platform where everybody sees what a fool the subject makes of himself."

Prather's activities seem to have been many and various. And apparently they have paid, for according to reports, he is estimated to be worth at least $150,000. Briefly tabulating, then, the different businesses with which Prather seems to have been directly or indirectly connected, we have:

"Metropolitan Institute of Sciences," New York: Sold mail-order courses in ("magnetic healing," hypnotism, etc.

"Psycho Success Club," New York: Sold mail-order courses in hypnotism, palmistry and clairvoyance.

"Professor Cairo," Portsmouth, England: An advertising astrologer.

"National Institute of Science," London, England: Sold mail-order courses in hypnotism.

"Professor Roxroy," London, England: Alleged to make character delineation from hand-writing.

"Clay Burton Vance," Paris, France: Sold horoscopes.

"Universal Mail Order Institute," New York: Alleged course of instruction in how to run a mail-order business; specifically in selling "Luxor Hair Tonic," which the "Institute" furnished.

"Economy Supply Co.," New York: Advertising "Luxor Hair Tonic."

"Imperial Products Co.," New York: Sold "Mrs. Knowles' Home Remedies."

"International Institute of Beauty Culture," New York: Professed to teach "beauty culture."

"Fremont Mfg. Co.," New York: Said to have manufactured phonographs.

"Arrow Chemical Co.," New York: Sells "Bitro-Phosphate" and other nostrums.

Correspondence

THE DRAFTING AS A PRIVATE OF A LOYAL PHYSICIAN OF FOREIGN BIRTH

To the Editor:—A friend of mine, a young graduate with a fine manhood and loyalty, with splendid medical and surgical training, but with a foreign birth, writes me from the Columbus Barracks:

Here I am, at last, in Uncle Sam's service, in a snugly fitting private's uniform. As you remember, I have been offering myself for service for the last year or more, in fact before the draft law was passed; and last month I went to Washington armed with my naturalization papers, protesting my loyalty, telling them that I was only 8 years old when I left my native country, and that I have lived in this country for the last sixteen years, was educated in its schools, trained in the spirit of its institutions, and that as I remembered our constitution, a naturalized citizen could aspire to any office but that of the President of the United States. I was turned down with the customary "Sorry, but can't help it." Last week I was drafted as a private. Oh, not that I mind to salute every sergeant and corporal that may condescend to look my way, but the queer fact that I was drafted while I offered myself fills me with some sort of sadness about the order of things. However, in these days we cannot and must not be at all particular and feel personal injustice as long as we are engaged in any capacity whatever in the grandest and holiest task that the world has ever been called on to perform—to punish a race which has broken loose from the moorings of civilization and humanity, a fit ally of the unspeakable Turk.

The philosophical and noble acquiescence of my friend, however, does not mitigate the flagrant inconsistency and injustice of his case, which is only an example of many hundreds. It is much above my comprehension. Hence, can a kindly soul tell me wherein the military advantage consists in drafting a physician and putting him into the trenches or in the medical service, but refusing a commission because of his foreign birth? If the life sacrifices of these men are acceptable and demanded, with what moral justification under the sun are they denied the consolation and the pride of their just honors?

A. H. Koumjian, M.D., Detroit.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

VOCATIONAL TRAINING FOR THE DISABLED

The Journal, August 3, page 399, contains an inquiry by H. A. A. as to schools where a crippled boy may receive vocational education. The American Red Cross Institute for Crippled and Disabled Men, 311 Fourth Avenue, New York, states that it was founded to help just such cases, as well as to make provision for the reeducation of disabled soldiers and sailors. There are classes in artificial limb making, mechanical drafting, monotype operating, oxyacetylene welding, jewelry making and motion picture operating. Training in these classes is given to disabled civilians free of charge. The institute, however, can furnish no boarding facilities to students, who must find accommodations in the city for themselves; therefore students are not urged to come from a distance for this training, although the institute gladly extends the opportunities it affords to all such as need them and are suitable for training.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, Oct. 1. Sec., Dr. Allen H. Williams, 219 Goodrich Bldg., Phoenix.

CALIFORNIA: Sacramento, Oct. 21-24. Sec., Dr. C. B. Pinkham, Butler Bldg., San Francisco.

COLORADO: Denver, Oct. 1. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, Oct. 8. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

GEORGIA: Atlanta, Oct. 8-9. Sec., Dr. C. T. Nolan, Marietta.

IDAHO: Boise, Oct. 1-2. Sec., Dr. Ray H. Fisher, Rigby.

ILLINOIS: Chicago, Sept. 24-27. Mr. F. C. Dodds, Supt. of Registration, Springfield.

KANSAS: Topeka, Oct. 8-9. Sec., Dr. H. A. Dykes, Lebanon.

MICHIGAN: Lansing, Oct. 8-10. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

MINNESOTA: Minneapolis, Oct. 1-4. Sec., Dr. T. McDavitt, 741 Lowry Bldg., St. Paul.

MISSOURI: Kansas City, Sept. 30-Oct. 2. Sec., Dr. George H. Jones, State House, Jefferson City.

MONTANA: Helena, Oct. 1. Sec., Dr. S. A. Cooney, Power Bldg., Helena.

NEW JERSEY: Trenton, Oct. 15. Sec., Dr. Alex. MacAlester, 438 E. State St., Trenton.

NEW MEXICO: Sante Fe, Oct. 14. Sec., W. E. Kaser, East Las Vegas.

NEW YORK: Albany, Buffalo, New York and Syracuse Sept. 24-27. Mr. H. J. Hamilton, New York Dept. of Education, Albany.

OKLAHOMA: Oklahoma City, Oct. 8-9. Sec., Dr. J. J. Williams, Weatherford.

RHODE ISLAND: Providence, Oct. 3. Sec., Dr. B. U. Richards, 315 State House, Providence.

UTAH: Salt Lake City, Oct. 7-8. Sec., Dr. G. F. Harding, 405 Templeton Bldg., Salt Lake City.

Alabama July Examination

Dr. S. W. Welch, chairman, Alabama Board of Medical Examiners, reports the written examination held at Montgomery, July 9-12, 1918. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 21 candidates examined, 14 passed and 7 failed. Two candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Alabama (1918) 75, 79.4, 80.7, 80.9, 83.2, 83.4, 84.5, 87.			
Emory University		(1917) 75; (1918)	75.2
Northwestern University		(1902)	87.5
Johns Hopkins University		(1918)	86.6
Meharry Medical College		(1918)	75
Vanderbilt University		(1917)	76.3
	FAILED		
University of Arkansas		(1918)	62.9
Chattanooga Medical College		(1907)	70.9
Meharry Medical College (1917) 65.6; (1918) 65.6, 68.4, 69.3.			
Memphis Hospital Medical College		(1913)	68.6
College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Atlanta College of Physicians and Surgeons		(1911)	Georgia
University of Tennessee		(1901)	Tennessee

Arizona July Examination

Dr. Allen H. Williams, secretary of the Arizona Board of Medical Examiners, reports the oral and written examination held at Phoenix, July 2-3, 1918. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 11 candidates examined, 10 passed and 1 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Medical College of Alabama		(1905)	84.9
Denver & Gross College of Medicine		(1903)	83
Northwestern University		(1900) 94.3; (1911)	81.3
University of Illinois		(1914)	80.7
Johns Hopkins University		(1917)	81.7
St. Louis University		(1916)	94.7
Memphis Hospital Medical College		(1889)	85
Vanderbilt University		(1915)	79.8
School of Medicine and Pharmacy of Guadalajara		(1889)	91
	FAILED		
Hahnemann Med. College and Hospital of Chicago		(1882)	44

One candidate, a 1918 graduate of Hahnemann Medical College of the Pacific, who formerly received an osteopathic license, received, on presentation of his medical degree, a license to practice medicine and surgery.

Colorado July Examination

Dr. David A. Strickler, secretary of the Colorado State Board of Medical Examiners, reports the written examination held at Denver, July 2, 1918. The examination covered 8 subjects and included 80 questions. An average of 75 per cent. was required to pass. Nineteen candidates, including 9 osteopaths, took the physician's and surgeon's examination, all of whom passed. Two candidates did not furnish satisfactory requirements; one candidate failed to take the examination; one candidate, an osteopath, was expelled for cheating, and one candidate withdrew his application. Ten candidates were licensed through reciprocity. One candidate received a license because of prolonged Indian service. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Colorado (1918) 79.1, 80.2, 81, 87.2, 87.4, 88.7, 90.5.			
Chicago College of Medicine and Surgery		(1917)	84.9
Northwestern University		(1918)	81.6
St. Louis University		(1918)	82.1
College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Columbian University		(1893)	Dist. Colum.
Rush Medical College		(1902) Iowa; (1915)	Illinois
Medical College of Fort Wayne		(1882)	Michigan
Kansas Medical College		(1904)	Kansas
University Medical College of K. C.		(1911)	Missouri
University of Nebraska		(1907)	Nebraska
Jefferson Medical College		(1903)	Penna.
Medico-Chirurgical College of Philadelphia		(1905) (1907)	Penna.

Book Notices

ALCOHOL: ITS ACTION ON THE HUMAN ORGANISM. Cloth. Price, 60 cents, net. New York: Longmans, Green & Co., 1918.

This little book represents a review of the present state of scientific knowledge on the action of alcohol on the human system. It has been prepared as a provisional basis for further research by an advisory committee appointed in November, 1916, by the Central Control Board (Liquor Traffic). The members of the committee were: Lord D'Abernon, G.C.M.G.; Sir George Newman, K.C.B., M.D.; Prof. A. R. Cushny, M.D., F.R.S.; H. H. Dale, M.D, F.R.S.; M. Greenwood, M.R.C.S.; W. McDougall, M.B., F.R.S.; F. W. Mott, M.D., F.R.S.; Prof. C. S. Sherrington, M.D., F.R.S., and W. C. Sullivan, M.D. Soon after it was appointed, the committee came to the conclusion that, as a starting point for further research, it was necessary to state as briefly as might be the present state of human knowledge on the action of alcohol. The book under review is the outcome of this decision. The conclusions presented are the unanimous judgment of the committee. In reaching them the authors, we are told, had no idea of taking sides with any existing opinions and have frankly admitted doubt when they felt unable, from the available evidence, to state definite conclusions. While the committee realizes the grave and widespread social evils that follow the excessive use of alcoholic beverages it has not allowed its physiologic findings in the present book to be influenced by social issues. The volume impresses one as being essentially sincere, impartial and cautious. While it is impossible in the brief limit of a review to give in full the conclusions of this committee, they may be thus summarized:

1. The main effects of alcohol, aside from those that follow its continued excessive use, are due to its action on the nervous system and, so far as any direct action is concerned, alcohol, when administered in moderate amounts at sufficient intervals and in diluted form, has no effect of any serious and practical account on the respiration, circulation, digestion or the muscular system.

2. The action of alcohol on the nervous system is essentially sedative and not stimulative—excepting possibly in its influence on the respiratory centers. Its assumed stimulative properties are illusory. They are, in fact, an effect of the narcotic influence of the drug which, by dulling the drinker's perception of unpleasant conditions and, by removing the control exercised by the higher nervous centers, renders him

less self-critical and makes him feel better and more efficient than he really is.

3. The objective effects of alcohol on the nervous system are to lower functional activity. A dose that produces no noticeable change in the skill of performing a simple act will impair the performance of an act demanding a more delicate coordination and control.

4. The narcotic effect of alcohol does not necessarily imply that it is valueless in all circumstances, for there is nothing intrinsically good about a stimulant or intrinsically bad about a narcotic. When an individual has to meet an emergency in which his highest powers of perception and judgment are needed, alcohol is not merely useless, it is positively and unequivocally detrimental. There are, however, emergencies in which the individual would be assisted by a relaxation, and here the sedative action of alcohol, at least so far as its immediate effect is concerned, may be advantageous. The committee thinks that possibly the value attributed to the rum ration given to those suffering the acute discomfort, cold and nervous strain inseparable from trench warfare may possibly be explained this way. It is also suggested that the reputation which alcohol has as a restorative in emergencies is probably not due to any direct stimulation of the nervous system or of the heart. Rather it is due to its sedative influence on the nerve centers, thus weakening the inhibition on the heart's action that follows in such cases and, by its narcotic influence on the higher levels of the brain, relieving pain and anxiety and increasing the general comfort.

5. Alcohol has food value and, unlike ordinary foodstuffs, does not require to undergo digestion before it can be taken up by the blood stream. The objections to its use as a food, however, except possibly in emergency conditions such as acute diseases where the assimilation of ordinary foods is more or less interfered with, are amply sufficient to condemn its use in health as a source of bodily energy. These objections are that it impairs the efficiency of the higher nerve functions and, unlike other foods, it is not stored in the body in altered form but remains as alcohol in the blood and organs until it is destroyed by combustion. As this oxidation process is gradual, the drug, if in sufficient amount, may seriously injure the tissues.

6. The use of alcohol to promote working efficiency is physiologically unsound, as the drug is not only useless or detrimental in its immediate effect, but in its ultimate result is also likely to be seriously injurious.

7. Believing that the majority of people who use alcohol take it, not because they imagine that it has any food value, but because its taste and immediate effects are agreeable, the committee is of the opinion that there are conditions under which the use of alcoholic beverages may be physiologically permissible. The question, of course, is dealt with wholly from the physiologic standpoint and does not take into consideration any of the problems of social evils, ethics or national economy. The committee holds that alcoholic liquors when so taken as to avoid the poison action of the drug may be considered physiologically harmless in the case of a large majority of normal adults. The precautions necessary to guard against the poison action are summed up practically in the propositions (*a*) that to avoid a continued action on the tissues, a sufficient interval should elapse between the times when alcohol is taken as will prevent the persistent presence of a deleterious amount of the drug in the body; (*b*) to prevent direct injury to the mucous membrane of the stomach, alcohol should not be taken in concentrated form and without food.

THE SERIOUSNESS OF VENEREAL DISEASE. By Sprague Carleton, M.D., F.A.C.S. Boards. Price, 50 cents. Pp. 67, with 26 illustrations. New York: Paul B. Hoeber, 1918.

This book consists of twenty-six illustrations showing the ravages of syphilis, with brief reports of from two to five lines concerning the history of each case. It closes with brief instructions for those having gonorrhea or syphilis. It was prepared primarily in a limited edition for the use of Base Hospital No. 48, with a view to use in prophylaxis education. This purpose it has no doubt served quite well.

Medicolegal

Against Joint Information for Unlawfully Practicing Medicine

(*Durston et al. v. State* (*Tex.*), *200 S. W. R. 524*)

The Court of Criminal Appeals of Texas reverses a judgment of conviction of the two defendants, Durston and another, who were charged with practicing medicine without complying with the requisites of the statute with reference to obtaining a license, because the information charged the offense jointly against both defendants, on which ground its legality was challenged. The court says that, so far as it has learned, the exact question has not been reviewed in Texas; but, following the authorities of several other states, the court is constrained to hold that it was error to refuse to quash the information. It is not criminal to practice medicine, but it is unlawful to do so for pay without obtaining a license. A license authorized is personal to the individual. His practicing without obtaining it is a personal default, not one that he can commit in connection with another, and the prosecution for the default cannot be sustained under a joint charge.

Malpractice in Statements with Regard to Removal of Appendix Not Proved

(*Rich v. King* (*Me.*), *102 Atl. R. 704*)

The Supreme Judicial Court of Maine orders a judgment to be entered for the defendant in this action for alleged malpractice in statements said to have been made by the defendant as to the removal of the plaintiff's appendix, and in not telling him that it had not been removed in an operation performed by the defendant at his hospital. The plaintiff alleged that he suffered much and was put to great expense by many attacks of pain in the abdomen during a period of some three years because he had been informed that his appendix had been removed, when in fact it had not been, for, with the understanding that the appendix had been removed, his physician could not determine the nature of his ailment, until finally another operation was performed. The declaration stated further that the plaintiff said it was the duty of the defendant to notify him that the appendix had not been removed; that the defendant did not so notify him; that it was an added duty of the defendant not to tell the plaintiff that he had removed the appendix from his body, when he had not removed it. But, as the court views it, the injuries alleged to have been suffered by the plaintiff seemed to be ascribed to an alleged express statement of the defendant that his appendix had been removed, when in fact it had not been removed, and was not based on the alleged omission to declare to him that the appendix had not been removed, and that it was still in his body.

The defendant, the court says, performed his operation in the presence of another physician. Both physicians said that a large abscess was found; that the intestine was so inflamed and the condition of the plaintiff so serious that extensive exploration was highly dangerous; that the appendix was not removed nor was any attempt made to remove it; and that pus was drained from the cavity of the abscess. The defendant stated that in the examination of the cavity of the abscess which he felt he could safely make he could not detect the presence of the appendix, and that, if he had, he should have removed it. Subsequent measures were such as provided for continued drainage and healing of the wound. The plaintiff admitted that no error was committed in what was done in the performance of the operation. Under the circumstances attending the operation, his statement that the defendant told him that the appendix had been removed was grossly improbable. The defendant was a surgeon of great skill and long experience. He had, then, no interest to state other than the truth. The plaintiff now has. But the plaintiff at the time he alleged the conversation occurred must have within twenty-four or forty-eight hours suffered surgical shock and the shock following the administration of ether, for which he

was a bad subject. His mind may have not comprehended clearly what took place and was said, and he may have unconsciously intermingled what the defendant or the other physician or others truthfully told him with conclusions of his own and figments of his own imagination.

Again, the plaintiff and his wife testified to the effect that some two or three days after the operation, when the defendant was present, the conversation turned to a game of baseball in which the defendant had taken part, and the plaintiff remarked that he played when at school, and the defendant said, "You can play on the no-appendix team now." Both the plaintiff and his wife admitted that the defendant spoke in a "joking way," and the wife stated that the conversation was not of a serious nature. The court is clearly of the opinion that the statement of the defendant made in the manner in which it was made and in a conversation of such character should not be considered sufficient evidence to sustain the grave charge made in the declaration.

The court is clearly of the opinion that no breach of duty on the part of the defendant by reason of any statement made to the effect that the appendix had been removed, as alleged, was supported by the evidence. Nor does the court find it necessary to make any findings of law as to the duty of a physician and surgeon in the premises, but has assumed, without declaring, the law to be as the plaintiff claimed.

Society Proceedings

COMING MEETINGS

Am. Assn. of Obstetricians and Gynecologists, Detroit, Sept. 16-18.
American Association of Railway Surgeons, Chicago, Oct. 16-18.
American Public Health Association, Chicago, Oct. 14-17.
Delaware State Medical Society, Wilmington, Oct. 8.
Indiana State Medical Association, Indianapolis, Sept. 25-27.
Missouri Valley Medical Society, Omaha, Sept. 19-20.
New Mexico Medical Society, Albuquerque, Oct. 7-8.
Ohio State Medical Association, Columbus, Oct. 1-3.
Pennsylvania State Medical Society, Philadelphia, Sept. 23-26.
Vermont State Medical Society, Burlington, Oct. 10-11.
Virginia State Medical Society, Richmond, Oct. 22-25.
West Virginia State Medical Association, Harpers Ferry, Oct. 1-3.
Wisconsin State Medical Society, Milwaukee, Oct. 2-4.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

August, 1918, 156, No. 2

1 Recent Developments in Intestinal Bacteriology. A. I. Kendall, Chicago.—p. 157.
2 *Frequency of Protozoic Enterocolitis in Middle West; Clinical Manifestations, Diagnosis and Treatment. F. Smithies, Chicago. —p. 173.
3 *Effect of Stimuli from Lower Bowel on Rate of Emptying Stomach. F. W. White, Boston.—p. 184.
4 *Primary Carcinoma of Vermiform Appendix. S. P. Reimann, Philadelphia.—p. 190.
5 *Two Cases of Suprarenal Disease. O. T. Osborne, New Haven, Conn.—p. 202.
6 Magnesium Sulphate Solutions in Treatment of Spastic Contractures of Rectum and Sigmoid Colon. H. W. Soper, St. Louis. —p. 205.
7 *Sarcoma of Heart. I. Perlstein, Chicago.—p. 214.
8 Cholelithiasis: Disturbances of Cholesterin Metabolism as Factor in Gallstone Formation. M. A. Rothschild and A. O. Wilensky, New York.—p. 239.
9 Lingual Tonsil: Goiter, Glossodynia and Focal Infection. G. Sluder, St. Louis.—p. 248.
10 Surgical Treatment of War Wounds. C. L. Gibson, New York. —p. 252.
11 Cerebrospinal Fever. F. Marino, Camp Meade, Md.—p. 270.

3. Effect of Lower Bowel Stimuli on Emptying Stomach.—The roentgen-ray method was used by White to study the effect of stimuli from the lower bowel on the rate of emptying of the stomach; the effect of mechanical filling and distention of the colon by enemata in men and cats; the effect of chemical irritation of the cecum in cats; the effect of diseases of the lower bowel in 120 cases of chronic colitis, tubercular ulceration and cancer of the colon, chronic and acute appendicitis and adhesions of the lower ileum and colon. His results all point the same way: (1) delay in emptying the stomach is the exception, not the rule, in lesions of the lower bowel; (2) a strong stimulus is needed from the lower bowel to slow the stomach, for it was found that the stomach emptied a barium meal within the normal time in some cases of ileal stasis of two or more days' duration, and in most cases with good sized twelve-hour residue in the ileum, also when the colon was distended with a large enema, also in most cases of chronic appendicitis and chronic inflammations and tumors of the colon.

Experiments on animals showed that when the colon was irritated by injections into the cecum variable results were obtained; intense irritation caused vomiting; less marked irritation caused either delay in emptying the stomach up to about twice the normal time or rapid emptying of the stomach and whole digestive tract; moderate or slight irritation had no effect. The results were not perfectly graded, evidently because of variable spasm. Marked delay in emptying the stomach is far more often the result of actual lesions about the pylorus than of reflexes from the bowel. Stomach symptoms in intestinal cases are not, as a rule, the result of slow emptying of the stomach.

4. Primary Carcinoma of Vermiform Appendix.—Three facts stand out very conspicuously in the study of the literature of this neoplasm. The condition has never been diagnosed clinically and a consideration of the symptoms which have been presented by the patients in whom the lesion has been found shows that nothing in any way suggestive of anything other than an ordinary acute or chronic appendicitis is presented. Second, the condition may give rise to extension and metastasis. Third, the condition may be present and yet not be evident on gross inspection either when the appendix is in situ or when it is in the pathologic laboratory. Reimann therefore believes that it follows that aside from symptoms which lead to its removal it should be removed whenever the abdomen is opened in its neighborhood, regardless of symptoms, for in many cases discovered no symptoms at all were given. Every appendix should be subjected to both careful gross and histologic examination. Reimann reports twelve new cases occurring in 10,651 specimens.

5. Suprarenal Disease.—One of the cases cited by Osborne is unusual because of the marked symptoms of insufficiency of the suprarenal glands, as shown by the unusual amount of pigmentation and the exceedingly low blood pressure. There was no history of fever. The lungs and other parts of the body were not involved in the tuberculous process. There were no digestive symptoms until the last few weeks of life. The man (34 years of age) died from the extreme weakness of his heart and the low blood pressure. The pulse pressure, Osborne says, was one of the shortest he ever noted, the difference between the systolic and the diastolic being, at the first observation, only five points. Under suprarenal it temporarily increased to thirty points. The second case was one that was unusually marked by the pigmentation deposits and unusually interesting because of the disappearance of the pigmentation under suprarenal treatment. The loss of muscular strength in both these patients, due to suprarenal deficiency, was very marked. Osborne is convinced that it cannot be attributed entirely to the low blood pressure, and therefore poor circulation; it is in part, at least, due to muscle weakness.

7. Primary Sarcoma of Heart.—Perlstein reports a case of primary sarcoma of the heart which originated in the subepicardial areolar tissue. The patient, a man, aged 43 years, complained of shortness of breath and cough, first noticed two weeks previously. He also had a slight irritation in the left side, thoracenteseis withdrew bloody fluid. The patient had not had any pain to amount to anything during the course of the disease. The postmortem examination: Subepicardial

sarcoma of heart (mixed cell). Metastases into pericardial fat, pleura and mediastinal lymph glands.

American Journal of Ophthalmology, Chicago

August, 1918, 1, No. 8

12 Pemphigus of Conjunctiva. R. Connor and C. A. Burkholder. —p. 545.
13 Quinin Poisoning, Its Ocular Lesions and Visual Disturbances. R. H. Elliot, London, England.—p. 547. To be continued.
14 Case of Neurofibromatosis of Orbit. C. A. Campbell, Bay City, Mich.—p. 560.
15 Case of Conjunctivitis of Fornix. J. S. Fernandez, Havana, Cuba. —p. 562.
16 Case of Homologous Corneal Transplant. A. Martin, Phoenix, Ariz.—p. 566.
17 Iridectomy for Optical Purposes. J. H. McKellar, Los Angeles. —p. 567.
18 Apparent Accommodation in Aphakia. W. Zentmayer, Philadelphia.—p. 570.
19 Ophthalmoplegia and Optic Neuritis; Report of Cases. F. A. Morrison, Indianapolis.—p. 571.
20 Case of Hole in Disk. C. B. Harwood, Houston, Texas.—p. 572.
21 Case of Bilateral Luxation of Lens. F. Allport and J. Smith, Chicago.—p. 573.

American Review of Tuberculosis, Baltimore

August, 1918, 2, No. 6

22 National Tuberculosis Association in Time of War. C. L. Minor, Asheville, N. C.—p. 323.
23 Tuberculosis as an Army Problem. J. H. Pratt and L. Brown, Saranac Lake, N. Y.—p. 335.
24 *War and Tuberculosis. D. A. Stewart, Ninette, Man.—p. 357.
25 Tuberculosis and Soldier. T. McCrae, Philadelphia.—p. 372.
26 Pain in Chest with Special Reference to Pulmonary Tuberculosis. J. B. Hawes, 2d, Boston.—p. 380.

24. **War and Tuberculosis.**—So far as the British and Canadian armies are concerned, Stewart claims it can safely be said that the expected increase in tuberculosis has, fortunately, not occurred; that the bad effects of war, so far as this disease is concerned, seem to have been neutralized by the good effects of mobilization; and that a young man has less chance of breakdown with tuberculosis in the army than he had in prewar civilian life, and apparently much less in England than he would have in civilian life in time of war. The chief element in the etiology of army tuberculosis has undoubtedly been acute infections, especially infections of the upper respiratory tract. Men gathered from all parts of the country into crowded barracks were all exposed to the infections each brought. Measles, pertussis, scarlet fever, mumps, diphtheria, tonsillitis infected their thousands; but influenzas of all sorts, catarrhs of every variety, common colds and uncommon colds, familiar forms and trench forms of bronchitis infected their tens of thousands. They were universal in barracks, camp and trench. The whole army coughed. And these "colds" undoubtedly in many cases were but the prelude to the larger play. The diagnosis of tuberculosis has been made more difficult by war.

Annals of Otology, Rhinology and Laryngology, St. Louis

March, 1918, 27, No. 1

27 Surgery of Tongue. J. C. Beck, Chicago.—p. 3.
28 Susceptibility to Infection Manifested by Remains of Incompletely Removed Tonsils. H. W. Loeb, St. Louis.—p. 103.
29 Method of Medicating Eustachian Bougies. L. M. Hurd, New York.—p. 114.
30 Location of Lateral Sinus from External Markings; Also, Approach to Mastoid Antrum, as Modified by Surface Markings. H. J. Prentiss, Iowa City, Iowa.—p. 116.
31 Occurrence of Nodules of Cartilage in Tonsil. J. Forman, Columbus.—p. 137.
32 New Operation for Collapsed Alae Nasi. O. Wilkinson, Washington.—p. 145.
33 Case of Purulent Leptomeningitis of Otitic Origin. D. Layman, Indianapolis.—p. 149.
34 Cases of Bilateral Abductor Paralysis of Vocal Cords. R. Butler. —p. 153.
35 Remote Results of Foci of Infection in Nose and Throat. J. B. Greene.—p. 160.
36 Removal of Foreign Bodies from Larynx, Disproving Previously Made Diagnosis. H. Hastings, Los Angeles.—p. 176.
37 Rhinoscopy. E. M. Holmes, Boston.—p. 179.
38 What Is Cause of Defective Orientation or Equilibration? L. R. Culbertson, Zanesville, Ohio.—p. 187.
39 Importance of Early Intubation and Use of Antitoxins in Membranous Laryngitis. A. C. Wolfe, Columbus.—p. 189.
40 Nasal and Nasopharyngeal Fibroma, with Reference to Multiplicity of Growths. G. M. Coates.—p. 191.
41 Lingual Abscess. J. A. Cavanaugh, Chicago.—p. 206.
42 Cases Illustrating Diagnosis of Intracranial Complications of Ear Disease Complications. G. W. Boot, Chicago.—p. 213.
43 Importance of Recognizing Relation of Ear Conditions to General System. G. E. Davis, New York.—p. 226.
44 Value of Results in Anacousis Depends on Local and General Condition of Person Who Is Deaf. G. de Parrel.—p. 230.
45 Rôle of Pseudodiphtheria Bacillus in Pathogenesis of Ear, Nose and Throat Diseases. H. McNaught, San Francisco.—p. 245.
46 Association of Ocular and Nasal Accessory Sinus Disease. G. O. Ring, Philadelphia.—p. 251.
47 Osteoma of Frontal Sinus; Report of Case. E. C. Sewall, San Franisco.—p. 275.
48 Clinical Ozena and Its Vaccine Treatment. H. Horn and E. A. Victors, San Francisco.—p. 288.

Boston Medical and Surgical Journal

August 15, 1918, 179, No. 7

49 Hospital Standardization; Its Meaning. J. T. Bottomley, Boston. —p. 219.
50 Administration of Military Base Hospital and Its Comparison with Civil Hospital. C. Frothingham, Camp Devens.—p. 223.
51 Need of Systematic Teaching of Hospital Interns. E. H. Bradford, Boston.—p. 229.
52 Social Service and Follow-Up Work. R. M. Smith, Boston.—p. 233.
53 Hearing Test to Detect Malingering. J. F. Callahan, Brockton. —p. 236.

August 22, 1918, 179, No. 8

54 The Massachusetts Tuberculosis Sanatoriums and What They Plan to Do. A. K. Stone, Framingham Center.—p. 255.
55 Rôle of County Tuberculosis Hospital in Massachusetts. O. S. Pettingill, Hebron, Me.—p. 259.
56 Local Municipal Tuberculosis Hospitals in Massachusetts. E. A. Locke, Boston.—p. 263.
57 Massachusetts Tuberculosis Dispensaries. J. S. Hitchcock, Northampton.—p. 269.
58 *Wound Shock and Vasomotor Center. W. T. Porter, Boston and E. Emerson, Providence.—p. 273.

58. **Wound Shock and Vasomotor Center.**—Further experimental evidence is detailed by the authors to prove that fat embolism of the vasomotor center is a frequent cause of wound shock. The demonstration of fat embolism of the vasomotor center as a cause of wound shock is as follows: (1) Excluding abdominal wounds, in which a hydrostatic fall in blood pressure may follow an invariable local injury to the largest vascular area in the body, the most frequent causes of shock in wounded soldiers are shell fracture of the femur and multiple wounds of the subcutaneous fat. (2) In fracture of the femur and in multiple wounds of the subcutaneous fat, considerable numbers of fat globules are found in the blood. (3) A quantity of fat much smaller than that known to circulate in the blood in the injuries most often followed by shock will produce shock when the nutrient vessels of the vasomotor region are stopped.

Bulletin of Johns Hopkins Hospital, Baltimore

August, 1918, 29, No. 330

59 *Clinical Aspects of Peptic Ulcer; Roentgen Diagnosis in Seven Hundred and Forty-Three Cases. F. H. Baetjer and J. Friedenwald, Baltimore.—p. 177.
60 *Experimental Meningococcus Meningitis. C. R. Austrian, Baltimore.—p. 183.
61 *Blood Pressure in Amyloid Disease of Kidney. K. Hirose, Baltimore.—p. 191.

59. **Clinical Aspects of Peptic Ulcer.**—From studies on the many cases of peptic ulcer in which roentgen-ray examinations were made, Baetjer and Friedenwald believe that they are justified in concluding that the roentgen ray offers most valuable assistance to the diagnosis of peptic ulcer, and although this method is not yet sufficiently well developed to be relied on alone without entering into the clinical aspects of the disease, it is of the greatest diagnostic help in obscure cases. Positive findings are noted in about 84 per cent. of cases of peptic ulcers and in 79 per cent. of cases operated. In duodenal ulcer there is excessive hypermotility of the stomach with rapid evacuation of the contents, so that the greater portion is extruded within the first half hour; there is hypermotility of the duodenum with formation, usually, of a deformity which remains fixed in all of the examinations.

The diagnosis of gastric ulcer is dependent on two conditions, namely, the functioning of the stomach, and the finding of the filling defect. It is only when the filling defect is situated along the anterior surface of the stomach and along the anterior surface of the lesser and greater curvatures that it can be demonstrated. On the other hand, it matters not what the situation of the ulcer is, the functions of the stomach are materially affected. An excessive irritation from the ulcer causes hypermotility and a spastic condition of the pylorus, so that for the time being there is practically no expulsion of bismuth. It is only when the spasticity relaxes that a portion of the bismuth is expelled. In gastric ulcer, wherever its situation, the authors always look for a certain amount of retention of contents. There is always a more or less marked hour-glass formation. According to their observations the functional signs are often as important as the presence of the filling defect in arriving at definite conclusions, inasmuch as in 8 per cent. of the cases, although there were no defects found, the functional changes pointed definitely to ulcer.

The greatest difficulties arise in the diagnosis of complicated cases; that is, when adhesions are present. These so frequently mask the usual findings that it is often impossible to determine whether there is really an ulcer of the stomach at hand or a lesion of some other organ. When the ulcer is situated at or near the pylorus, signs of partial obstruction frequently aid in establihsing the diagnosis.

The roentgen ray affords an almost absolute means of differentiating between gastric and duodenal ulcer. By means of the roentgen-ray examination Baetjer and Friedenwald can generally rule out the presence of ulcer. They can determine approximately the degree of healing as well as recurrence of an ulcer which cannot be as certainly determined in any other way. Sufficient evidence can be obtained as to the extent and induration of the ulcer and degree of obstruction to guide, in a measure, as to the necessity of surgical intervention.

60. **Experimental Meningococcus Meningitis.** — Austrian found that the cerebrospinal canal can be infected by way of the blood stream. Though under normal conditions the presence of a bacteremia does not lead to the developent of meningitis, when a condition of hyperemia of the thecal vessels exists, meningeal inflammation may result. Neither when normal conditions are present nor when meningeal irritation has been induced do meningococci introduced into the nasal mucous membrane gain access to the meninges. The demonstration of meningococci in the nasal secretion is to be interpreted as evidence of the excretion of these organisms by this route, but the conclusion is not necessarily warranted that they find a direct portal of entry to the meninges by the same channel.

These observations seem important from an etiologic standpoint. They indicate the probability that epidemic cerebrospinal meningitis, as it occurs in man, is to be regarded as a metastatic disease developing in the course of a general infection, rather than as the evidence of a primary local disease. They do not necessarily indicate the portal of entry of the invader, nor antagonize the view that the cocci are taken into the body through the upper respiratory tract, a fact apparently established. The observation that meningococcal sepsis in rabbits is followed by the development of meningeal disease only when the meninges are not in a normal state is suggestive and may explain in part, at least, the occurrence of the disease in some of those exposed and its failure to develop in others in like contact with sources of infection.

61. **Blood Pressure in Amyloid Disease of Kidney.**—In a series of fifty-nine cases, examined by Hirose, the presence of amyloid in the kidneys has always been associated with chronic nephritis. It is impossible to determine whether the nephritis antedated the amyloid or was developed coincidentally with it. In forty cases in which measurements were given the kidneys were larger than normal, while in nine they were small and granular. In all but one of the fifteen cases in which the blood pressure was recorded it was found to be normal or below normal. In the one patient whose systolic pressure was 170 mm., the kidneys were rather large and there was no cardiac hypertrophy. Of the fifty-nine cases, ten showed cardiac hypertrophy, but only one of these was associated with small granular kidneys, and in none was high arterial tension noted. It appears from this that even if it be assumed that a persistent nephritis produced cardiac hypertrophy and hypertension, the advent of the amyloid-forming process must have reduced the blood pressure to a low point and may even have caused a retrogression in the size of the heart.

Colorado Medicine, Denver

August, 1918, 15, No. 8

62 Diagnostic and Prognostic Significance of Albuminuria. W. T. Little, Canon City.—p. 190.
63 Social Insurance as Public Health Issue. J. M. Shapiro, Cleveland.—p. 197.
64 Asepsis and Antisepsis in Modern Dentistry. S. W. Schaefer, Colorado Springs.—p. 199.

Indiana State Medical Association Journal, Fort Wayne

August, 1918, 11, No. 8

65 Occupational Neuroses. C. E. Cottingham, Indianapolis.—p. 297.
66 Case Simulating Brain Abscess of Upper Motor Zone Occurring as Sequel to Pneumonia: Operation; Death: Necropsy. G. W. McCaskey, Fort Wayne.—p. 302.
67 Ocular Diseases Due to Foci of Infection Adjacent to or Remote from Eye. S. A. Shoemaker, Bluffton.—p. 305.

Iowa State Medical Society Journal, Des Moines

August, 1918, 8, No. 8

68 Acute Abdominal Perforations. F. W. Cram, Sheldon.—p. 279.
69 Choice of Operation in Fractures. A. P. Stoner, Des Moines.—p. 283.
70 Medical vs. Surgical Treatment of Peptic Ulcer. S. G. Hands, Davenport.—p. 287.

Journal of Bacteriology, Baltimore

May, 1918, 3, No. 3

71 Apparent Close Relationship Between B. Pertussis and B. Bronchisepticus. N. S. Ferry and A. Noble, Detroit.—p. 193.
72 *Growth of Bacteria in Protein-Free Enzyme-Digestion and Acid-Digestion Products. H. C. Robinson and L. F. Rettger, New Haven, Conn.—p. 209.
73 *Characteristics of Bacteria of Colon Type Occurring in Human Feces. L. A. Rogers, W. M. Clark and H. A. Lubs.—p. 231.
74 Classification of Colon-Cloacae Group. M. Levine, Ames, Iowa.—p. 253.
75 Fowl Cholera: Toxins of Bacillus Avisepticus. P. Hadley.—p. 277.
76 Lactose Fermenting Yeast Producing Foamy Cream. O. W. Hunter.—p. 293.
77 Classification and Nomenclature of Bacteria. R. E. Buchanan, Ames, Iowa.—p. 301.
78 Early Instructors in Bacteriology in United States. E. G. Hastings and C. B. Morrey.—p. 307.

72. **Growth of Bacteria in Protein-Free Products.**—Numerous cultural tests were made by Robinson and Rettger, with opsin as the chief and, as a rule, the only source of nitrogen in the medium. Cultural studies were also carried on with protein-free acid-digestion products of proteins. The opsin was obtained from Paris in small metal capsules. In its original state it resembles highly concentrated commercial meat extract, although much lighter in color. It dissolves readily in water, yielding a brown but perfectly clear solution which is easily and completely decolorized by filtration through animal charcoal. The protein-free enzyme-digestion production opsin serves as an excellent culture medium for both pathogenic and nonpathogenic bacteria. Practically all of the many organisms employed grew as well or better in opsin than in Witte's peptone. The cultural characters on the two mediums were in general the same. With the exception of the diphtheria group, the different organisms remained viable as long on opsin as on the standard peptone-meat infusion medium.

The decomposition products of casein, lactalbumin and edestin obtained by acid hydrolysis were also employed as culture mediums. Of these the hydrolyzed casein gave the best results, but it was inferior to the opsin. The edestin product was the least satisfactory. It is highly probable that in the hydrolysis of these proteins with hydrochloric acid the treatment is sufficient to destroy many of the intermediate decomposition products which serve so admirably as food for micro-organisms. Bacteria do not require proteins, even in

minute quantities, to carry on their normal cultural development, but obtain their sustenance from less complex substances, as for example the amino-acids and perhaps some of the simpler polypeptids.

73. **Bacteria of Colon Type in Human Intestine.**—A collection of 177 cultures of the colon aerogenes type was made by Rogers and his associates from human feces. These were examined for pigment formation, indol production, liquefaction of gelatin, acid fermentation of glucose, lactose, sucrose, raffinose, melibiose, arabinose, inulin, mannitol, dulcitol, adonitol and glycerol, the methyl red test, the carbinol or Voges-Proskauer reaction and the anaerobic production of gas from glucose as determined by exact methods. A tentative scheme of classification for the typLoid colon group is presented in which the primary divisions are based on the nature of the metabolism as indicated by the gases evolved. The gas analysis of a few available cultures of the paratyphoid group gave a gas volume and ratio agreeing with that of the colon type.

Journal of Biological Chemistry, Baltimore

August, 1918, 35, No. 2

79 *Autolysis of Animal Tissues. K. G. Dernby, New York.—p. 179.
80 Purin Metabolism of Dalmatian Coach Hound. H. G. Wells, Chicago.—p. 221.
81 New Form of Colorimeter. J. C. Bock and S. R. Benedict, New York.—p. 227.
82 *Rapid Method for Determination of Iron in Small Quantities of Blood. L. Berman, New York.—p. 231.
83 Determination of Buffer Effects in Measuring Respiration. W. J. V. Osterhout, Cambridge, Mass.—p. 237.
84 *Studies in Calcium and Magnesium Metabolism. Effect of Acid and Other Dietary Factors. M. H. Givens, New Haven, Conn.—p. 241.
85 Properties and Composition of Oocytin. G. W. Clark, Berkeley, Calif.—p. 253.
86 Histidin and Carnosin. Synthesis of Carnosin. L. Baumann and T. Ingvaldsen, Iowa City, Iowa.—p. 263.
87 Oxidation Product of Creatin. L. Baumann and T. Ingvaldsen, Iowa City, Iowa.—p. 277.
88 Reduction of Aldehyds to Corresponding Alcohols. Reduction of Heptylic Aldehyd (Oenanthol). P. A. Levene and F. A. Taylor, New York.—p. 281.
89 Cephalin. Hydrocephalin of Egg Yolk. P. A. Levene and C. J. West, New York.—p. 285.
90 Formation of Unsaturated Acids in Animal Organism. Behavior of p-Methoxyphenylpropionic Acid in Organism of Rabbit. I. Matsuo, Kiota, Japan.—p. 291.
91 *Food Value of Eulachon. M. R. Daughters, Corvallis, Ore.—p. 297.
92 Efficiency of Maize Protein in Adult Human Nutrition. H. C. Sherman and J. C. Winters, New York.—p. 301.
93 *Effect of Heat on Citric Acid Content of Milk. Isolation of Citric Acid from Milk. H. H. Sommer and E. B. Hart, Madison.—p. 313.
94 Formation of Oxyphenyllactic Acid in Animal Organism and Its Relation to Tyrosin Catabolism. Y. Kotake, Osaka, Japan.—p. 319.
95 Relation Between Nutrition and Formation of Kynurenic Acid From Tryptophane. Z. Matsuoka, Osaka, Japan.—p. 333.
96 Decomposition of Muconic and Adipic Acids in Animal Body. Y. Mori, Osaka, Japan.—p. 341.
97 *Experiments on Utilization of Nitrogen, Calcium, and Magnesium in Diets Containing Carrots and Spinach. H. B. McClugage and L. B. Mendel, New Haven, Conn.—p. 353.
98 Relation of Quality of Proteins to Milk Production. E. B. Hart and G. C. Humphrey, Madison, Wis.—p. 367.
99 Method for Separation and Quantitative Determination of Lower Alkylamines in Presence of Ammonia. F. C. Weber and J. B. Wilson, Washington, D. C.—p. 385.
100 Inhibition of Foaming. C. H. Fiske, Cleveland.—p. 411.

79. **Autolysis of Animal Tissues.**—The proteolytic enzymes of liver, spleen, pancreas, and leukocytes and of the mucous membrane of the stomach have been studied by Dernby. In all of these tissues it has been possible to demonstrate the existence of pepsin-like enzymes, which split native proteins to peptones but not further, and for whose action the optimal hydrogen ion concentration in all cases is at about $p_H = 3.5$. This enzyme cannot act in alkaline or even neutral solutions. It has also been possible to show that in all of these tissues there are proteolytic enzymes of the type of trypsin or erepsin that attack only peptones or peptids, and split them into amino-acids. The optimal hydrogen ion concentration for all these enzymes seems to be about $p_H = 7.8$ (from 7.6 to 8.0), and their action is checked in slightly acid solution. Both types of proteolytic enzymes occur in all the tissues studied. In some of them, however, one or the other of the enzymes has been predominant over the others, as the pepsin in the stomach and the trypsin in the pancreas. Unlike the less specialized enzymes, pancreatic trypsin and gastric pepsin can easily be extracted from the cells.

82. **Method for Determination of Iron in the Blood.**—In the method described by Berman the iron held in combination in fluid blood is split off by the action of concentrated hydrobromic acid. The iron is oxidized to the ferric condition and the organic matter is destroyed by potassium permanganate. The resultant solution is mixed with a solution of ammonium sulfocyanate in water and acetone and the color is compared with that of a standard iron solution similarly treated. The ashing process is eliminated, and a complete determination may be made in ten to fifteen minutes.

84. **Calcium and Magnesium Metabolism.**—As a result of new experiments Givens is able to confirm his previous statement that ingested hydrochloric acid is without marked influence on the calcium and magnesium metabolism of the dog. The previously reported increased urinary elimination of calcium after acid consumption has been observed anew; but the absolute amount of this increase was not sufficient to affect to any noticeable degree the calcium balance.

91. **Food Value of Eulachon.**—Eulachon is an Indian name given to a species of marine fish found along the Pacific Coast from Oregon to Alaska. The eulachon is related to the smelt and it is often miscalled by this name. In food value the eulachon is equal to the salmon. It contains a higher percentage of fat than the salmon and in flavor is considered superior.

93. **Effect of Heat on Citric Acid Content of Milk.**—Sommer and Hart confirm the findings of Scheibe and Henkel; namely, that cow's milk does contain citric acid. The amount found was approximately 0.2 per cent. of the milk, or 2 per cent. of the milk solids. Citric acid is not destroyed in the heating of milk even in the autoclave at 15 pounds pressure for one hour, nor is it changed to an insoluble form on heating.

97. **Experiments on Utilization of Nitrogen in Diet.**—Metabolism experiments made by McClugage and Mendal showed that when carrots and spinach were added to the diets of dogs the nitrogen was not well utilized; the calcium in milk was better utilized than that in calcium carbonate; the calcium in spinach and carrots was poorly assimilated as compared with the calcium in milk. The authors believe that the conclusion seems justified that green vegetables should not be used extensively as a substitute for milk as the dietary source of calcium.

Journal of Cutaneous Diseases, Chicago

September, 1918, 36, No. 9

101 *Bruck's Nitric Acid Reaction with Serum and Cerebrospinal Fluid in Syphilis. I. Toyama and J. A. Kolmer, Philadelphia.—p. 429.
102 Chemical Changes in Subcutaneous Fat in Sclerema Neonatorum. C. S. Smith, Chicago.—p. 436.
103 *Treatment of Syphilis at Camp Travis. W. H. Guy, Pittsburgh.—p. 441.
104 *Castor Oil. D. W. Montgomery, San Francisco.—p. 446.

101. **Bruck's Reaction with Serum and Cerebrospinal Fluid in Syphilis.**—Toyama and Kolmer applied Bruck's test with the serums of 100 persons, the majority of whom were under treatment for syphilis. Wassermann and Bruck tests with ninety-four serums (the Bruck tests being conducted with fresh active serums) yielded similar results with sixty-five serums, or about 70 per cent. All of the positive reactions with both tests occurred with the serums of persons manifesting the lesions of the secondary and tertiary stages of syphilis and undergoing treatment with arsphenamin (arsenobenzol of the Dermatologic Research Laboratories). With the serums of twenty-three persons, or about 25 per cent., the Wassermann tests were negative and the Bruck tests positive; eight of these serums were from persons regarded as nonsyphilitic and the balance (fifteen) from persons in the secondary and tertiary stages of syphilis undergoing vigorous treatment with arsphenamin and yielding positive

Wassermann reactions on admission to the clinic and prior to the time when Bruck tests were made. According to these results, therefore, the Bruck test was found to yield presumably about 8 per cent. falsely positive reactions; also that the property of syphilitic serum responsible for the Bruck test probably persists under treatment for a longer period than the reagin or Wassermann antibody. With the serum of six persons, or about 6 per cent., the Wassermann tests were positive and the Bruck tests regarded as negative; all of these serums were from persons presenting the lesions of the secondary and tertiary stages of syphilis on entering the clinic and undergoing active treatment with arsphenamin. The results of Bruck tests conducted with eighty-nine serums in the fresh active state and again after inactivation (heating) showed similar results in 85 per cent.; in 13 per cent. the reactions were positive with active and negative with inactive serum; all serums were from cases of secondary and tertiary syphilis undergoing treatment. It would appear, therefore, that active serum is better adapted for the Bruck test than inactivated serum.

103. **Treatment of Syphilis at Camp Travis.**—Routine treatment comprises comparatively intensive courses of arsphenamin (salvarsan) or its equivalent with mercury, the two drugs being used in conjunction. An arsphenamin (salvarsan) injection and mercurial treatment are given each week for ten weeks, after which the patient is given a complete therapeutic rest for five weeks. Then his physical examination and the Wassermann test are repeated; another course of treatment is then started, and so on until the Wassermann reaction becomes and stays negative. The arsenobenzol brand of arsphenamin has been the arsenical preparation most used. The gravity method of administration is used, dosage being determined at the rate of 0.1 gm. for each 30 pounds of body weight. About 400 cases of syphilis have been handled.

104. **Castor Oil.**—The main facts for a dermatologist to remember about castor oil, Montgomery says, are (1) its solubility in alcohol, and (2) the use of hot castor oil as a solvent for salicylic acid.

Journal of Nervous and Mental Disease, Lancaster, Pa.

August, 1918, **48**, No. 2

105 Pathology of Human and Experimental Poliomyelitis. H. S. Howe, New York.—p. 97. To be continued.
106 Familial Progressive Muscular Atrophy in Adults. A. S. Hamilton, Minneapolis.—p. 127.

Kansas Medical Journal, Topeka

August, 1918, **18**, No. 8

107 Responsibility of Profession Toward Disabled Soldier. G. C. Robinson, St. Louis.—p. 185.
108 Care and After-Treatment of Surgical Cases. J. A. Fulton, Kansas City, Kan.—p. 190.
109 Case Studies of One Hundred Inmates of Kansas State Industrial Farm for Women. S. L. Axford.—p. 193.

Laryngoscope, St. Louis

August, 1918, **28**, No. 8

110 Primary Principles of Technic of Plastic Surgery of Face. I. Frank, Chicago.—p. 565.
111 Operation for Bony Occlusion of Posterior Nares. L. E. White, Boston.—p. 571.
112 Radical Mastoid Operation; Indications, Technic and Results. J. M. Smith, New York.—p. 584.
113 Bacteriology of Tonsil Crypts. O. H. Maclay, Chicago.—p. 598.
114 Hypophysis Cerebri and Its Morphologic Influence. F. P. Lewis, Buffalo.—p. 60.
115 Medical Profession and Deaf. L. I. Morgenstern, New York.—p. 612.
116 *New Ear Test for Malingering. F. F. Teal, Lincoln, Neb.—p. 615.
117 Technic of Perineural Anesthesia for Radical Surgery of Maxillary Sinus. L. Gatewood, New York.—p. 616.

116. **New Ear Test for Malingering.**—In uncovering the dishonesty of "slackers" who claim to be deaf, Teal has used the following test for which he claims priority. The test is of service in unilateral catarrhal deafness only, but as this comprises the greater class of ear malingerers it is exceedingly useful. The person is blindfolded and in a friendly, helpful manner, told that if he is really deaf there is no disposition to overlook it. But he is also warned that if he tries to show dishonesty in the test, he is sure to be "tripped up" and his veracity doubted. Air conduction is tested and of course is negative. The Weber test is then used and usually (though reluctantly) the man hears the fork in the deaf ear. Bone conduction over the mastoid is next tested and again he admits hearing the fork. He is then commended for his answers and assured that he answered as he should. The last and real test is now used. After stating that the last test (bone conduction) will be repeated a nonvibrating fork (or lead pencil, flat end) is placed over the mastoid to make the man think he is being tested in the same manner, but at the same time a vibrating fork is brought up close to the auricle with the other hand to test the air conduction. If he is simulating deafness he will answer that he hears the fork (under the impression that he hears the sound through the bone) and the fact of a normal path of air conduction is established. If he is really deaf, he will not hear the vibrating fork. Teal uses for this test a Hartman's "C" fork.

Medical Record, New York

August 24, 1918, **94**, No. 8

118 Relationship of Oral Sepsis to Systemic Disease, and Its Bearing on Treatment: Cases. H. B. Anderson, Toronto.—p. 311.
119 Surgery in Its Relation to Psychoses and Psychoneuroses. R. T. Morris, New York.—p. 315.
120 Drug Addiction and Its Treatment. J. Diner, New York.—p. 316.
121 Training of Physicians for Public Health Service. C. E. McCombs and E. H. Lewinski-Corwin, New York.—p. 319.
122 Psychic Element as Important Factor in Development and Treatment of Peptic Ulcer. J. Kaufmann, New York.—p. 324.
123 Hysteria vs. Neurasthenia. S. Block, Brooklyn.—p. 326.
124 Broadening Field of Mental Medicine. W. B. Cornell, New York.—p. 329.

Medicine and Surgery, St. Louis

May, 1918, **2**, No. 5

125 Recurring Tetanus. K. Speed, Chicago.—p. 499.
126 Surgical Treatment of Unilateral Renal Tuberculosis; Importance of Early Diagnosis. H. L. Kretschmer, Chicago.—p. 504.
127 Requirements of Successful Hemorrhoidectomy, and How They Are to Be Met. A. A. Landsman, New York.—p. 513.
128 Scope of Local Anesthesia. T. O. Burger, San Diego.—p. 518.
129 Orthopedic Diagnosis. J. K. Young, Philadelphia.—p. 524.
130 Fractures of Astragalus. J. A. Brooke, Philadelphia.—p. 530.
131 Two Cases of Fracture of Cervical Vertebra. E. G. Beck, Chicago.—p. 534.
132 Rectal Surgery Under Local Anesthesia. R. E. Farr, Minneapolis.—p. 540.

Nebraska State Medical Journal, Norfolk

August, 1918, **3**, No. 8

133 Surgical Successes and Failures. A. D. Dunn, Omaha.—p. 235.
134 Lymphatic Drain of Nose and Throat with Its Relation to Focal Infections. W. P. Wherry, Omaha.—p. 237.
135 Bone Surgery; Report of Cases. C. H. Breuer, Lincoln.—p. 242.
136 Pelvic Conditions Producing Bladder Symptoms. M. Emmert, Omaha.—p. 247.

New Jersey Medical Society Journal, Orange

August, 1918, **15**, No. 8

137 Is It Good Practice for Surgeon to Perform Visceral Exsections and Resections while Viscera Are Inflamed? P. A. Harris, Paterson.—p. 257.
138 Prostate Question. S. R. Woodruff, Bayonne.—p. 263.
139 Modern Aspects of Neurologic Surgery. H. G. Dunham, New York.—p. 268.

New York Medical Journal

August 24, 1918, **108**, No. 8

140 Nephritis. T. Howard, Brooklyn.—p. 313.
141 Rational Treatment of Chronic Nephritis. A. S. Blumgarten, New York.—p. 316.
142 Two Cases of Measles. J. R. Graham, New York.—p. 322.
143 Advantages of Home Treatment in Tuberculosis. I. E. Gluckman, New York.—p. 323.
144 Protein Treatment of Psoriasis. E. Van Ness Van Alstyne, New York.—p. 326.
145 Spanish Influenza. E. E. Cornwall, Brooklyn.—p. 330.
146 Statue of Edward Livingstone Trudeau. S. A. Knopf, New York.—p. 330.
147 Hospital Ship "Mercy." N. J. Blackwood.—p. 332.
148 Reeducation of Disabled Soldiers at Bombay. D. C. McMurtrie, New York.—p. 336.

Survey of Head Surgery, Washington, D. C.

September, 1918, 1, No. 2

149 Dark Field Study of Five Cases of Pseudomembranous Oral Infection Diagnosed Clinically as Vincent's Angina, at Base Hospital, Fort Dodge, Iowa. A. S. Brumbaugh, Camp Dodge, Iowa.—p. 45.
150 Case of Impacted Fourth Molar. H. H. Braxton, Camp Hancock, Ga.—p. 49.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Annals of Tropical Medicine, Liverpool

July, 1918, 12, No. 1

1 Cysts of Common Intestinal Protozoa of Man. J. R. Matthews.—p. 17.
2 Cysts of Entameba Histolytica and of Entameba Coli. A. M. Smith.—p. 27.
3 *Studies in Treatment of Malaria. Oral Administration of Quinin Sulphate Ninety Grains on Two Consecutive Days Only, in Simple Tertian Malaria. J. W. W. Stephens and others.—p. 71.
4 Strongylidae in Horses. W. Yorke and J. W. S. Macfie.—p. 79.
5 Id. W. Yorke and J. W. S. Macfie.—p. 91.
6 Polyneuestic Lobes in Larvae of Tsetse-Flies (Glossina) and Forest Flies (Hippoboscidae). R. Newstead.—p. 93.

3. Treatment of Malaria.—In a series of eighty-nine cases treated by Stephens and his associates with quinin sulphate in solution, 90 grains (six doses of 15 grains each), on each of two consecutive days, at least eighty-four (94 per cent.) relapsed. A parasitic relapse occurred in twelve to fifty-three days, average eighteen days. In three cases there was no parasitic relapse within an observation period of sixty days. One patient was discharged on the twenty-seventh day, the second on the fortieth day. In sixty-four cases true febrile relapses occurred in thirteen to fifty-four days. Two cases relapsed parasitically on the sixteenth and thirty-ninth days; parasites were not found again and there was no febrile relapse up to the eighty-fifth and seventy-third days, respectively. A number of patients presented symptoms of quinin poisoning, for instance, deafness, giddiness, vomiting, tremors, dimness of vision. One patient became temporarily blind. In all cases unfavorable symptoms disappeared within two to three days.

Archives of Radiology and Electrotherapy, London

July, 1918, 23, No. 2

7 Treatment of Cases with Injury to Peripheral Nerves. N. H. M. Burke.—p. 34.

British Medical Journal, London

August 3, 1918, 2, No. 3005

8 Significance of Fats in Diet. E. H. Starling.—p. 105.
9 Treatment in Toxemias of Pregnancy. G. I. Strachan.—p. 108.
10 *Malaria and Diseases of Eye. J. Kirk.—p. 110.
11 Operation for Reconstruction of Urethra in Cases of Severe or Impermeable Stricture. J. Guthrie.—p. 111.
12 Influenza Epidemic in Camp. C. Averill, G. Young and J. Griffiths.—p. 111.

10. Malaria and Diseases of Eye.—Kirk urges that in military operations in tropical countries in all cases of chronic eye trouble latent errors of refraction should be looked for. Their correction will in many cases cure or alleviate greatly the condition even though the error may be a small one.

Lancet, London

August 3, 1918, 2, No. 4953

13 *Tuberculosis: Colony Treatment and After-Care. P. C. Varrier-Jones and G. S. Woodhead.—p. 133.
14 Colonies for Consumptives. N. D. Bardswell.—p. 137.
15 Rapid Cure of Hysterical Symptoms in Soldiers. A. F. Hurst and J. L. M. Symns.—p. 139.
16 Routine Use of Spinal Analgesia in Gynecology. N. M. Bey.—p. 141.
17 *Two New French Methods for Staining Blood Films and Blood Parasites. L. Tribondeau.—p. 142.
18 Isolation of Dysentery Bacilli from Feces. H. Whitehead and J. Kirkpatrick.—p. 143.

13. Colony Treatment and After-Care of Tuberculosis.—Directors of sanatoriums find that ex-soldier patients discharge themselves even before the end of the regulation three months. The reasons for this are usually well founded. First, the temperament of the patient is such that he cannot accommodate himself to institution life. Second, patients sometimes discharge themselves owing to domestic or home difficulties. The authors suggest as a remedy: Let the patient, instructed in a trade which if not his own is closely allied to it, realize that while undergoing his treatment he is being trained for a better berth, a more highly remunerative job. It is the waste of time which the patient imagines is going on during his stage at the sanatorium to which he so strongly objects. Experience gained at the Bourn Colony and at Papworth Hall goes far to show that the mental attitude of the patient is materially improved by useful occupation, the nearer to his own trade the better, while it is found that with time and care, which assuredly are never wasted, there is no insuperable difficulty in grading any kind of work as may be desired.

The combination of sanatorium treatment (perhaps the term "colony treatment" is to be preferred) and industrial work is a step in the right direction. If, ask the authors, we can bring about the arrest of the disease while the patient is carrying on his own trade, have we not solved, partially at any rate, the problem which we set out to solve? On the colony estate at Papworth are at the present time families whose bread winners are consumptives, with tubercle bacilli in their sputum, who by means of the state subsidy—a pension—are carrying on their original trade under ideal conditions—happy, contended, and earning their own livings. A concrete proposition has been placed before these men, and they have not hesitated to grasp it and avail themselves of what is its best feature—the shielding of the patient from the keen competition of the outside world.

It has been hinted that the colony is admirably suited to the development of slackers—an idlers' paradise. A consumptive patient with numerous tubercle bacilli in the sputum can never be set down as a slacker. He is definitely diseased. There can be no question of malingering. The proof of the presence of the disease can be demonstrated. The oftrepeated mistake of accusing the consumptive of slackness is a sure road to disaster. With all the good will in the world he is unable to do a full day's work. It must not be expected of him. Once the presence of the bacillus is ascertained and the diagnosis established the greatest caution must be exercised in dealing with so-called slackness, for be it remembered that the consumptive is a strange psychologic phenomenon, and as a rule is ready to do more work than is good for him rather than too little. The patient far from slacking takes pride in showing how well he can do his work. The more advanced the disease—within, of course, well-defined limits—the more anxious is he to carry on. The exceptions, few in number, have to be dealt with specially.

17. New Methods for Staining Blood Films and Blood Parasites.—These two methods are related to the well known methods of Leishman and provide efficient substitutes for the secret processes of Giemsa and other German writers. Of the two methods, one (neutral solution of eosinate of methylene blue converted by ammonia) is more rapid in execution and gives more complete results, but it requires very pure and neutral distilled water. When good distilled water is not available this second method (neutral solution of eosinate of natural methylene blue and alkaline solution of eosinate of methylene blue converted by ammonia) is preferable to the first; it is less delicate. The method of preparation and use of these stains is described in detail.

Practitioner, London

August, 1918, 101, No. 2

19 Tooth Impacted in Secondary Bronchus of Left Lung; Removed by Lower Bronchoscopy. S. Thomson.—p. 61.
20 *Method of Reducing Dislocations of Shoulder Joint. P. Turner.—p. 75.
21 Problem of Dyspeptic Neurasthenic. E. L. Ash.—p. 77.
22 Prophylaxis of Fundamental Predisposing Influences of Neurasthenia Pura and Pseudoneurasthenic State. S. H. Bennett.—p. 83.
23 Hysteria as Seen at Base Hospital. J. L. M. Symns.—p. 90.
24 Hysterical Paralysis of Long Standing. L. Scott.—p. 97.
25 *Diagnostic Significance of Hemoptysis. E. G. Glover.—p. 103.
26 Management of Epidemic of Diphtheria. F. H. Kelly.—p. 110.

20. **Method of Reducing Dislocations of Shoulder Joint.**—A number of cases, both recent and oldstanding (the longest interval between the injury and the treatment being twenty-four days) were treated by Turner by the following method: The patient is anesthetized lying on his back on an operating table or on a convenient couch. The surgeon now rolls up an ordinary washing towel and loops this round the inner side of the injured arm, just below the axillary folds, so that the free ends pass outward at right angles to the long axis of the body. The loop can equally well be made from a length of flannel bandage 3 inches in width. As soon as the patient is anesthetized an assistant grasps the forearm on the injured side and, without moving the arm from the patient's side, applies extension strongly in a direction parallel to the long axis of the patient's body. At the same time the anesthetist, whose hands are now free, makes counter extension by slipping his fingers into both of the patient's axillae, while the surgeon, grasping the free ends of the loop, pulls steadily in an outward direction. The extension, counter extension and external traction should be made simultaneously and steadily, as well as strongly, but without jerking. The head of the humerus enters the glenoid cavity at once with the characteristic click, and the arm is then bandaged to the patient's side.

Turner has tried this method in about twelve cases, recent and old, in which other methods had been tried, in some on two or three occasions without success, as well as in a few recent cases as the method of choice. In every case the dislocation has been reduced at once and without difficulty. All cases have been of the subcoracoid or the subclavicular varieties, but Turner sees no reason why the other less common varieties should not be reduced in the same way, provided that there is no fracture. The principle of the method is that the downward traction draws the head down to the level of the rent in the capsule, while the outward traction pulls it through the rent into the glenoid cavity. Its success, where other methods have failed, depends probably on the stronger and more direct outward traction to the upper part of the humerus.

25. **Diagnostic Significance of Hemoptysis.**—Briefly, the significance of hemoptysis, as Glover sees it, is as follows: While slight hemoptysis is one of the commonest forms of bleeding in pulmonary tuberculosis, nontuberculous hemoptysis is also most commonly slight. The number of slight nontuberculous hemoptyses is very large, and in any case, even when a tuberculous lesion is the cause of bleeding from the lung, rapid arrest often occurs. When the signs are as a whole of doubtful import, it is an open question whether a slight hemoptysis is indicative of active disease or not, or for that part of it whether it is indicative of tuberculosis at all. On the other hand, when a moderately large or a severe hemoptysis takes place and other gross causes are excluded, the probabilities are that the lesion is tuberculous and, in most instances, actively evolutive, the exceptions being cases of rapidly healing or abortive tuberculosis. This, however, cannot be ascertained without the employment of specific methods of investigation either by serum reactions or by the use of subcutaneous doses of tuberculin, and until some such methods of examination are adopted an open mind must be maintained. Hemoptysis does not contraindicate test injections but it is an indication for careful dosage.

Archives Médicales Belges, Paris

April, 1918, **71**, No. 4

27 *Colibacilloses. F. Rathery.—p. 369.
28 *Icterohemorrhagic Spirochetosis. P. Nolf and J. Firket.—p. 380.
29 Eye Disturbances in Icterohemorrhagic Spirochetosis. L. Werkers and J. Firket.—p. 414.
30 After Amputation of the Arm. M. Stassen and G. Hendrix.—p. 418. F. Martin.—p. 428.
31 General Principles for Prostheses after Amputation. M. Stassen.—p. 443.

27. **Colon Bacillus Septicemia.**—Rathery reiterates that bacteriologic examination of the blood is the only means of differentiating colon bacillus septicemia from typhoid. In two of his five cases with positive findings the clinical picture was exactly like that of mild typhoid, with rapid convalescence. In other cases the septicemia resembled acute dysenteriform colitis in its manifestations, the attacks of pain and diarrhea. In the third case pulmonary symptoms predominated but there were always some symptoms on the part of the digestive apparatus, and infectious sore throat. Still another type was presented by one man of 36 who developed febrile jaundice and suppuration in the gallbladder in the course of an echinococcus cyst in the liver. Other echinococcus cysts were found in the lung at necropsy. Picot and Michel found colon bacilli in forty among 460 war wounds examined, including one case of skull wound. In the majority, the wounds were on the legs. The colon bacillus was in pure culture only in four of the forty. Some of the wounds were soiled and others only slightly so. The presence of colon bacilli did not interfere with the primary suture of the wounds. Rathery found the colon bacillus in the blood only in the above five cases out of 1,863 men whose blood was examined for the purpose.

28. **Icterohemorrhagic Spirochetosis.**—Nolf and Firket review the experiences with 100 cases at the Hôpital Cabour in Belgium. Most of the cases developed during hot weather. The disease was very severe in about 10 per cent.; in some of these the hemorrhages were alarming. In others the nervous symptoms predominated, or extreme prostration was the main feature. The blood pressure in this latter group was lower than they had ever observed before in any disease with a favorable outcome. They recorded the blood pressure in all the men with this spirochetosis, and regard the extreme hypotony often noted as the cause of the anuria. Others ascribe this anuria to toxic kidney derangement, but Nolf and Firket were impressed, on the contrary, with the absence of signs indicating involvement of the kidneys. There was no visible hematuria in any instance, and scarcely any albumin or tube casts in the urine. But the low blood pressure entailed the anuria, and this demonstrates the necessity for giving the patient abundant fluids to drink. The physician must pay special attention to this, as with the extreme prostration and the tendency to vomit, the patient is liable not to get enough to drink. They ordered the nurses to give these patients 3 liters of fluid a day, half in the form of milk. This was supplemented with epinephrin to tide the men past the danger point. They gave to every patient with minimal blood pressure of 6 c.c. mercury, four, six or even eight doses in the twenty-four hours, each of 0.5 c.c. of the 1 per thousand solution. A few patients were unable to drink so much fluid, and they were given subcutaneous injections of an isotonic solution of glucose or an intravenous injection of a 10 or 30 per cent. solution of glucose. The effect seemed to be favorable. They warn that the finding of spirilla in the urine may be accidental contamination or it may be a question of saprophytes. The fever may return, but the jaundice does not accompany it, nor the severe pains and other symptoms of the original onset, and the fever lasts only four or five or seven days at farthest.

In conclusion they comment on the close analogy between this spirochetosis and yellow fever. These two diseases are of the same type, only that yellow fever is graver. The analogy becomes identity, they assert, when this spirochetosis is compared with "bilious typhoid" or "Griesinger's disease," another tropical disease. This too, like the spirochetosis, is not contagious; its small foci are always located close to the mouths of sewers, and it appears in the summer and disappears during the winter.

Bulletin de l'Académie de Médecine, Paris

July 9, 1918, **80**, No. 27

32 *Agricultural Work for the Wounded. J. Bergonié.—p. 23.
33 Magnesium in Treatment of Cancer. J. Regnault.—p. 29.
34 *Hot Air in Treatment of the Gassed. J. Bandaline and J. de Poliakoff.—p. 30.
35 Gastritis and Dyspepsia. F. Ramond.—p. 32.
36 *To Measure Force of Jaws. P. Robin.—p. 33.

32. **Substitution of Natural for Artificial Physiotherapy.**—Bergonié laments that it has taken four years for even the most progressive physicians to become convinced that natural physical measures are incomparably superior to artificial measures in restoring approximately normal conditions in the wounded. Repeated muscular contraction, he reiterates, is the best form of deep massage of the tissues involved, and life

out of doors is the best all-around means for recuperation in general. All of this is realized by agricultural work, and he is applying it systematically more and more in treatment of the wounded, without waiting for complete healing. He pleads for hospitals in a farm environment to which the wounded can be sent after their operation, where wounds can be dressed and agricultural work imposed under medical surveillance. His three years' experience has convinced him more and more that work in the fields every day and all day long gives a functional activity superior both in quality and quantity to what can be realized with artificial physiotherapy, even leaving out of account the improvement in morale and hygiene of the out-of-doors life. He insists that the costly installations of mechanotherapy in the war hospitals have been an expensive blunder. It is time to admit this and turn to agricultural work, medically prescribed and under medical supervision, as superior to all other measures in treatment of the sequels of war wounds. Bergonié has been making a special study in the last few months of the present status of the wounded who had been treated with the natural or the artificial method of physiotherapy, and what he has found has aroused him to proclaim anew, with insistent emphasis, the superiority of the natural over the artificial method. At the Hôpital complémentaire 4, where it has been applied for a year, 93 per cent. of the 1,605 wounded were restored to the army, only thirty-six men being classed for limited service, and sixty-five men dismissed from all service, with thirty-eight stationary cases. He adds that the tangible results of 107,000 days of agricultural work form a useful by-product of the method.

34. **Hot Air in Treatment of Burns from "Mustard Gas."**—Bandaline has been much impressed in cases of severe burns with the prompt relief and promotion of healing that follow turning a jet of hot air on the lesion. He uses hot air at 150 or 180 C. under a pressure of 300 gm. It proved particularly effectual in treatment of the intense pain and insomnia from the burns caused by yperite—"mustard gas." In ten such cases the intense pains had persisted for three weeks or more, but under the hot air douches the lesions healed completely in three or four weeks.

36. **Functional Disability of the Jaws.**—In estimating the degree of disability after war wounds, Robin has found useful a device that he calls the buccal dynamometer. It records automatically the degree to which the mouth can be opened and the force left in the jaws. It thus enables appreciation of the amount of functional disability after a war wound of the jaws and reveals any attempt at simulation.

Paris Médical

June 15, 1918, 8, No. 24

37 *Beriberi with Edema. P. Mauriac and D. Duclos.—p. 465.
38 *Malignant Slow Endocarditis. H. Roger.—p. 468.
39 *General Anesthesia by Sacro-Cocainization. G. le Filliatre.—p. 471.
40 *Clinical Rachi-Albuminimetry. L. Boyer.—p. 475.
41 Radicular Phrenic Neuralgia. J. Lévy-Valensi, Brian and Aboulker. —p. 476.

37. **Beriberi with Edema.**—In this communication is described a small epidemic of twenty-one cases of beriberi in native troops from the Senegal, serving in France. The main features were the edema, the disturbances on the part of the heart, and the mononucleosis in the blood. There was albuminuria in half the cases. The edema predominated in the legs and spared the face and scrotum, but pulmonary edema developed in some. Retention of chlorids seemed to be a factor, as the edema subsided on a salt-poor diet. The men at first complained of pains in legs and chest, but seemed to forget them by the next day, except in one case in which there seemed to be actual myalgia. All the men recovered except one. The diagnosis of beriberi is not very certain as there was no tendency to polyneuritis, dyspnea or vomiting.

38. **Slow Endocarditis.**—Roger reports two cases of malignant endocarditis with a protracted course. One patient was a Russian lawyer of 40, the other a man of 30 in the diplomatic service. Both had had acute articular rheumatism in youth. The only hope seems to be from autogenous vaccine therapy and serotherapy, and this should be tried in such cases. The onset is insidious, and nothing on auscultation shows the development of the phase in the evolution of the old valvular lesion. The fever is the principal and often the only symptom; it is often remittent, but bed rest does not seem to reduce the temperature. The disease progresses in waves, and in the intervals the patient talks of returning to business. The waxy complexion is striking; it is quite different from the cyanosis of ordinary heart disease. Lassitude, emaciation and pains in the joints, inclined to be fleeting, but sometimes accompanied by swelling, are the chief complaints. The diagnosis of pulmonary tuberculosis is often erroneously made. Purpura is common, petechial spots rather than large ecchymoses, but the pathognomonic sign is the appearance of small erythematous nodules on the skin, about as large as a pea, painful, persisting for hours to two or three days, and occurring in groups of four or five. They appear mostly on fingers and toes, and are caused by minute emboli, scraps from the new vegetations forming in the endocardium. They are never found in other forms of heart disease.

39. **General Anesthesia by Sacrococainization.**—De Filliatre declares that more than 2,000 applications of the *barbotage* method of spinal anesthesia have confirmed the efficacy and harmlessness of the technic. With a single injection the entire spinal cord and its roots can be anesthetized. Cocain seems the best anesthetic for this technic. The needle is 12 or 15 cm. long; the syringe has a capacity of 3 c.c. and with it is used a graduated glass tube of 30 c.c. The needle is introduced into the sacrolumbar space at the first sacral vertebra. After removing the guide, the spinal fluid flows and is received in the graduated tube. Then the syringe containing the solution of cocain is attached and the piston is gently pushed in. Then it is allowed to slide back, having the patient cough if necessary. The piston is then pushed in again, and this maneuver is repeated three or four times. This *barbotage* terminated, the needle is withdrawn and the seated patient is made to recline. (The dictionary defines *barboter*, "to dabble, to paddle.") He draws 20 c.c. of the spinal fluid for anesthesia to the breast if the fluid drips, but takes 25 c.c. if it spurts. For anesthesia of the head, he draws 25 or 30 c.c. The amount of cocain for the subumbilical region is 2 c.c.; for the supra-umbilical region, 2.5 c.c. If the patient is very strong he goes up to 3 c.c. For the legs, 1 c.c. is enough. An assistant makes the patient breathe regularly twenty times a minute. During the operation and for two hours thereafter the patient's head is not moved. Another precaution is a subcutaneous injection of scopolamin morphin half an hour before the operation, with an injection of 3 mg. strychnin sulphate and of 5 cg. spartein sulphate. The eyes are then bandaged, and no one speaks during the operation.

40. **Clinical Albuminimetry for Spinal Fluid.**—The fluid is treated with a precipitating reagent, and is then compared with a scale of known strengths of albumin. The reagent advocated is a mixture of 13 gm. salicylic acid crystals and 15 c.c. of pure sulphuric acid. This mixture is heated gently, and set aside to cool as soon as fusion is complete. Then distilled water is added to bring it to 100 c.c. Then filter. The scale for comparison is a set of ten tubes containing human blood serum, starting with 1 c.c. and 74 c.c. of physiologic saline.

Presse Médicale, Paris

March 18, 1918, 26, No. 16

42 *Resisting Power of Blood Corpuscles in Various Isotonic Salt Solutions. H. Chauffard and J. Huber.—p. 141.
43 *Periosteum in Formation of Bone. R. Leriche and A. Policard. —p. 143.
44 *Quinin in Capsules. P. Ravaut.—p. 146.
45 Tertiary Syphilis in Morocco. Lacapère.—p. 146.
46 American Theories of Shock. J. Luzoir.—p. 148.
47 Abuse of Milk in Children. J. Comby.—p. 150.

42. **Resistance of Blood Corpuscles.**—Ringer's fluid seems to be the best adapted for testing the fragility of the blood corpuscles in hemolytic conditions. The aim should be to test them as much as possible in their natural environment. Different isotonic saline solutions may vary in their ion content, and hence they cannot be considered as physiologic equivalents.

43. **The Periosteum.**—The experiences of Leriche and Policard demonstrate that with periosteum one can almost make bone at will, whatever the age of the subject. The corticalis of the bone produces the bone tissue, and the periosteum keeps it within proper bounds. The regeneration of bone requires the cooperation of the two. The periosteum, thus physiologically understood, represents the true manageable element of surgical osteogenesis. Some of the histophysiologic details of the regeneration of bone are shown in illustrations, confirming that the periosteum serves as a region of ossification, but only when there is some bone tissue present. In a subperiosteal resection, for instance, scraps or slices of the osseous tissue, the corticalis of the bone, must be left adherent to the periosteum. From the combination of the two, results a regeneration of bone which is under control at all times.

44. **Capsules for Quinin.**—Ravaut urges the use of capsules which pass through the stomach unmodified. By this means all disturbing influence on gastric digestion is avoided. The technic for making protecting capsules is not perfected; those he has been using crumbled in three months.

Correspondenz-Blatt für Schweizer Aerzte, Basel

July 6, 1918, 48, No. 27

48 *The Prematurely Born. M. Reber.—p. 897.
49 *Transfusion of Blood. C. A. Pettavel.—p. 906. Conclusion.

July 13, 1918, 48, No. 28

50 Industrial Insurance from Otolaryngologic Standpoint. F. Siebenmann.—p. 929.
51 Treatment of Little's Disease. H. Hössly.—p. 935.
52 Herpes Zoster of Nose and Face with Paralysis of Ocular Muscles. W. Löffler.—p. 942.

48. **The Prematurely Born.**—Reber's experiance at the Basel Infant Asylum with 152 prematurely born infants has confirmed that such children must be given from 120 to 140 calories per kg. of body weight every day. It is possible for children to thrive even when they weighed only a little over 1,000 gm., that is, about 2 pounds and 4 ounces. The smallest surviving infant weighed 1,120 gm. at birth, and 1,010 gm. a few days later. The main difficulty is to get them to take the food. The smallest chest measure of any child that survived was 21 cm., and 26 cm. was the smallest circumference of the head. The prematurely born children of parents with tuberculosis or syphilis all died, and the children presenting protracted jaundice or attacks of asphyxia generally died. About 20 per cent. of all the prematurely born in his service were twins. The surviving prematurely born infants have nearly all developed into healthy children, with average weight and height for their years, and average hemoglobin percentage.

Incubators are not used now in the institution; the infants are kept warm with two or three hot water bottles in the bed, the head covered with a cotton padded hood, with careful and frequent control of the infant's temperature. The infant can be fed in this way without having to move it much. It is of vital importance not to let the child get chilled on its way from the residence to the institution. The drop in temperature after birth is exceptionally great in these infants. One child that survived had only 34.4 C. (94 F.) at one time, and normal temperature was not attained until after two weeks. Both the central and the peripheral regulations of the temperature seem to be defective. The evening rectal temperature was scarcely ever over 37 C. when the children were thriving. Even with children born at term, a rectal temperature over 37.2 C. (99 F.) he regards as pathologic. Only one died of the four prematurely born infants of women in eclampsia, and none of the four women with a heart defect.

He found buttermilk useful in the first weeks when the supply of breast milk was not adequate. A mixture of cow's milk and gruel to supplement the breast milk sent the weight up, probably from retention of water on account of the increased ingestion of salt. One of the larger of the prematurely born infants seemed to thrive perfectly on diluted cow's milk alone from the very first days.

49. **Transfusion of Blood.**—Pettavel describes the present status, technic and results of transfusion of blood, with the recent bibliography on the subject, including numerous articles from THE JOURNAL. The principal indications for it, he says, besides anemia from severe hemorhage, are in the hemorrhagic diatheses (hemophilia, hemorrhagic tendency in the newly born and hemorrhagic purpura), and in certain toxemias, such as poisoning with illuminating gas. To attempt transfusion of blood under other conditions is to bring discredit on it. We must not demand of it beyond what it is able to render.

Annali di Ostetricia e Ginecologia, Milan

January, 1917, 39, No. 1. Pub'd July, 1917

53 Spontaneous Healing of Ureter Fistulas after Gynecologic Operations. A. Gentile.—p. 1.
54 *Tuberculosis of Female Genital Organs. U. Tassoni.—p. 25.

54. **Tuberculosis of Female Genital Organs.**—Tassoni states that among the 948 patients in the Istituto Clinico Ostetrico-Ginecologica at Rome, in a recent three-year period, nine presented unmistakable tuberculous lesions in the genital organs. The tubes were involved in seven of the cases, while the ovaries and vagina were spared. In seven of the nine cases, hypoplasia of the genital organs had evidently afforded a predisposition, and in seven cases the lesions were secondary—usually to peritonitis. The interval between the primary lesion in pleura, lung or peritoneum was two, three, ten, twelve or fifteen years. The symptoms from the genital lesions were long vague and insidious. Five of the women had previously borne children. In one case there was concomitant gonorrhea, and in another, syphilis.

Clinica Chirurgica, Milan

Oct. 31, 1917, 25, No. 9-10

55 *War Wounds of the Skull. S. d'Este.—p. 225. Conclusion.
56 *Internal Hernia in Peritoneal Fossas. G. Bolognesi.—p. 250.
57 *Blood Cysts in the Neck. F. Nassetti.—p. 298.

55. **War Wounds of the Skull.**—D'Este's profusely illustrated article reviews his experience with 87 operative cases of war wounds of the skull. It teaches that exploration should never be neglected, even when the cranial wound seems insignificant. The skull in the region should always be exposed. A semicircular incision in the scalp gives the best flap for examination of the bone. He does not approve of craniotomy as the routine procedure, but only when it is called for. Then the traumatic area from scalp to brain must be cleared out, removing all loose splinters of bone and accumulations of blood, as well as all accessible projectiles. The splinters of bone, loose or still attached, are fitted into place in repairing the breach, fastening them if necessary with wire, silk or coarse catgut. He uses an extension frame, something like a photographer's head rest, which screws to the table and holds the head at the desired angle and height above the plane of the table. The brain was found to be injured in 36 of the total 87 cases, a simple contusion, inflammatory processes, or embedded splinters, but all the men recovered except six. In 4 men the brain lesion was found too serious for survival; in the other 2 complications were responsible for the fatality. The article is accompanied by a page long summary in French, in German and in English.

56. **Internal Hernia.**—Bolognesi refers to hernias in the hiatus of Winslow or the natural recesses in the peritoneum in the region of the duodenum, cecum, sigmoid flexure, etc. They are usually grouped as retroperitoneal hernias or Treitz' hernias. He has been studying these recesses on cadavers, and reviews the literature on clinical cases, giving thirty-five illustrations of the various types of these *fossette peritoneali*. The symptoms may be merely slight digestive disturbance or acute or chronic obstruction of the bowel. About 50 per cent. of the duodenal cases proved fatal, but there are quite a number of successful operative cases on record, and about thirty successful cases of the cecal type. He reports a case from his own experience belonging to this latter group. The patient was a man of 46 with acute ileus; he had had similar attacks during the last five years, but very much milder and retrogressing under an enema. The operation revealed an internal hernia in the ileo-cecal recess of the peritoneum, with strangulation of the bowel. The stercoremia was so intense that the man succumbed within thirty-six hours.

Seven pages of bibliography are appended, classified for each of the five peritoneal recesses involved. Summaries of the article in three languages are also given.

57. **Blood Cysts in the Neck.**—Nassetti presents an illustrated description of two cases and reviews fifty from the literature. In twenty-one of the cases an operation was attempted; in five cases necropsy first explained conditions. The differential diagnosis is not an easy matter. The features which speak for a blood cyst are the congenital nature of the tumor, the location in the side, or middle and side of the neck (carotid and supraclavicular), the soft and fluctuating consistency, the extreme compressibility, the rapid and pronounced changes in size and tension during muscular effort, and the extraction with a needle cannula of normal or more or less altered venous blood. None of these features, however, are pathognomonic. Some of the persons were so little incommoded by the lesion that they bore it for ten or twenty years before applying to a physician. There are five deaths on record, but two of the fatalities were due to other causes.

In treatment, compression of the tumefaction reduced it completely in the case of one babe of 4 months. Evacuation of blood does no good; even when associated with compression it never induced complete obliteration of the cavity. In some cases, 5 gm. a day of a 1:5 iodin solution, injected into the cavity, was followed by a cure, the consecutive thrombosis leading to the filling up of the cavity with connective tissue, but complications render this method too dangerous. Wocrner's patient died suddenly after the injection. Total enucleation of the cyst seems more rational treatment. This was applied in twenty-three cases, adults and children. Injury of the vein caused threatening hemorrhage in some of the cases. For this reason it seems advisable to ligate the afferent veins beforehand. Also the efferent veins to ward off gas embolism. Hueter had air embolism in one case, but without serious results. The ligatures need not be tied unless or until necessity arises. In cases with extensive adhesions, some have resected part of the cyst wall and painted what was left with phenol and alcohol, but total enucleation of the cyst ensures a complete and permanent cure. In Wolff's case the recurrence three years later was evidently due to the part of the cyst wall which had been left, as it had been adherent to a vein. This case confirms the advisability of resecting along with the cyst any adherent segment of vein.

Policlinico, Rome

July, 1918, **25**, Medical Section No. 7

58 Luetin in Diagnosis of Syphilis. F. De Napoli.—p. 193.
59 Fatal Hemorrhagic Jaundice. A. Bizzarri.—p. 206.
60 Pulmonary Tuberculosis with Bovine Bacilli in Woman. M. Pergola.—p. 216.

July, 1918, **25**, Surgical Section No. 7

61 Penetrating Wounds of Abdomen. G. Egidi.—p. 193.
62 *Changes in Lung after Ligation of Pulmonary Vessels. A. Avoni and P. Caliceti.—p. 207.
63 Successful Operative Treatment of Fistula in Track of Bullet Passing through Buttocks and Rectum. D. Taddei.—p. 219.

62. **Ligation of Pulmonary Vessels in Treatment of Tuberculosis.**—Avoni and Caliceti found that ligation of the branches of the pulmonary vein in rabbits entailed sclerosis in the corresponding territory. The ligation of these ramifications of the vein did not seem to be a serious procedure in the rabbits, but ligation of branches of the pulmonary artery always proved fatal from the grave lesions which developed in consequence in lung and pleura. They ranged from simple inflammatory processes and infarcts to abscesses and gangrene.

Riforma Medica, Naples

July 13, 1918, **34**, No. 28

64 Food Requirements. S. Baglioni.—p. 541.
65 Trauma and Tuberculosis. D. Giordano.—p. 543.
66 *Malaria Plasmodium in the Blood. G. Cavazzani.—p. 546.
67 *Diagnosis of Small Pleural Effusions. G. Tomasinelli.—p. 547.
68 *The Prevailing Febrile Epidemic. A. Montefusco.—p. 549.
69 Uterine Myomas. G. Cristalli.—p. 550.

66. **Evolution of Malarial Plasmodium in the Blood.**—Cavazzani relates experiences which seem to show that the evolution of the *Plasmodium vivax* in the blood differs from the description in the textbooks. His research has apparently demonstrated that certain bodies which have been considered a special form of the parasite are in reality merely empty shells or sacs. It is possible that the action of the laws of gravity may be the explanation of the rising of these empty shells and the consequent clogging of the vessels in the brain, and resulting apoplectic attack, in the course of pernicious malaria. The blood examined was all derived from men with recurring tertian and the *Plasmodium vivax* in the blood. In fresh specimens treated with the May-Grünwald stain, the shape of the red corpuscles containing the blue colorations, although sometimes a little wider in diameter, was never longer axially but rather inclined to be irregular in outline. The outline was not like that of a sac filled to repletion but more like an empty sac. Some seemed to have burst from distension, but some of the contents still clung to the corpuscle, as flour still clings to an emptied flour bag. The blue stain was seen only at the edges, the center being free from it, confirming that the center was empty. Certain corpuscles stained with eosin showed bunches at one or more points around the edge; these apparent bunches proved to be in fact merely the impression from the sinking in of the outline between them, from the collapsing in the center.

In the fresh specimens, moreover, examined within five minutes, at a temperature of 25 C., he noted numerous bodies which resembled a chestnut bur, with every prickle motile to such a degree that the body not only moves about in the plasma but pushes obstacles out of its way, scattering the corpuscles right and left when it meets a group of reds. The diameter of these bodies is about half that of the large reds, and the color is a little more distinct than that of the reds. A curved, forking projection, about 2 microns long, imparts such velocity of movement that in a few seconds it traverses the microscopic field. In the dried specimen, the outline is smooth, the projections evidently shrinking during the desiccation. In one specimen this body seemed to have just escaped from a red corpuscle beside it, and it was making contractile movements, at least 100 a minute. There can be no doubt as to the identity of these bodies with the plasmodium, he exclaims, but they take the eosin stain. The blue stain in the red corpuscles seems to be merely the stain taken by the walls lining the passage of the parasite on its way through and out of the red corpuscle. The blue stain shows the effects, the track, of the parasite, but not the parasite itself. He refers to research by his brothers which demonstrated pores in the red corpuscles. These pores explain the ready penetration of the parasite in the bacteriform stage into the red corpuscle. If the pore where it entered happens to get obstructed, the blue stain does not get into the red corpuscle. Cavazzani is physician in chief of the malaria section of the Bergamo base hospital.

67. **Small Pleural Effusions.**—Tomasinelli declares that the only way to detect a small pleural effusion is by letting it accumulate at one point by the action of gravity—all effusions are mobile, he insists, unless adhesions prevent. The patient should lie supine and the posterior wall of the chest should be auscultated, palpated and percussed. This is inconvenient, but it is possible by having the patient's neck supported as he lies with the upper part of his trunk projecting beyond the bed. Effusions, even those of inflammatory origin, slide around readily for weeks.

68. **The Prevailing Febrile Epidemic.**—Montefusco describes the febrile epidemic that is sweeping over Italy, as it did over Spain, and declares that rigorous clinical observation and epidemiologic considerations dispel all doubt and confirm that the epidemic is the so-called three-day fever and not influenza. No influenza bacilli have been found in the cases in Italy. Influenza is a cold weather disease; it is accompanied by symptoms on the part of the respiratory organs, while these are exceptional in the present epidemic. The pains in the limbs are more of the "break-bone" type of three-day fever and dengue than of influenza. Epidemics of three-day fever have been reported at various points in recent years, one at Messina in June, 1910, attacked 6,000 civilians and 1,000 soldiers.

Annaes Paulistas de Medicina e Cirurgia, S. Paulo

January, 1918, 9, No. 1

70 Balantidiosis in São Paulo. T. Bayma.—p. 1.
71 Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis. C. Ferreira.—p. 5. Commenced in Vol. 8, No. 12.—p. 269.

Archivos Españoles de Enf. del Ap. Digestivo, Madrid

June, 1918, 1, No. 6

72 Tests for Fermentation in Stools. F. F. Martinez.—p. 241.
73 Tardy Pains in Glandular Gastritis. A. L. Mingot.—p. 244.
74 Roentgen Diagnosis of Gastric Cancer. B. Barcelona.—p. 264.

Brazil-Medico, Rio de Janeiro

May 25, 1918, 32, No. 21

75 Flagellate Parasites of Brazilian Mammals. A. da Cunha.—p. 161.
76 *Antiscorpion Serotherapy. E. Villela.—p. 161.
77 *Nervous Symptoms from Eye Strain. C. de Rezende.—p. 162.

June 1, 1918, 32, No. 22

78 Cholecystitis with Liver Abscess. C. Fonte.—p. 169.

76. **Antiscorpion Serotherapy.**—Since Villela's first publication on this subject (summarized in THE JOURNAL, Feb. 9, 1918, p. 423), this serotherapy has been applied successfully in a number of cases. Most of them were mild, but two were quite serious, and he gives the clinical history in these cases. They are particularly instructive as rapid recovery followed the serotherapy in the one case in which the antivenom was injected early. In the other case there was an interval of twenty hours, and the child, a little more than 2 years old, died three hours later. The other child, 10 years old, had been stung on the hand, forearm and in the sacral region. She began to vomit almost at once and incessantly, and felt very chilly, with extreme thirst and agitation, tachycardia, arrhythmia, and intense pain in the stung arm. In less than four hours the antiscorpion serum was injected in a dose of 6 c.c. in the arm and 2 c.c. in the thigh. The serotherapy had been preceded by three venesections. Improvement was soon manifest, but the vomiting kept up for several more hours. The next day, except for local tenderness, there were no further disturbances.

77. **Nervous Disturbances and Eye Strain.**—De Rezende comments on the widely diverse pains and other disturbances for which eye strain may be responsible. The connection between the headache or other pains or nervous disturbances with the defect in refraction causing the eye strain is almost invariably overlooked by the general practitioner, he says, in Brazil, at least. He cites literature which shows that this is not restricted to Brazil. Seven particularly instructive cases are reported. One woman had headache for four years, sometimes frontal and sometimes occipital, most frequent and tormenting during the months of extra work in her trade of making flowers. She wore spectacles, but when proper glasses were prescribed all symptoms disappeared. This patient was a woman of 44, and the headache came on during the day. The other patients were between 19 and 28, and the symptoms from eye strain included dizziness, morning vomiting or attacks of hysteria besides the severe headache, generally in the morning. One young woman said she felt as if there was something wrong inside her head and that insanity was impending, and she pressed her hands on the two parietal regions.

Cronica Medica, Lima

May, 1918, 35, No. 659

79 *Syphilitic Cerebral Arteritis. E. Odriozola.—p. 129.
80 *Anomalies in Pectoralis Muscle. J. C. Dianderas.—p. 134.
81 *Psychanalysis in Neuroses and Psychoses. H. F. Delgado.—p. 140.

June, 1918, 35, No. 660

82 *Spirochetes in Lima Rats. R. E. Ribeyro.—p. 157.
83 Motor Aphasia. L. D. Espejo.—p. 159.
84 Section for Contracted Pelvis. J. A. Maldonado.—p. 162.
85 *Dubious Sex. M. E. Portugal and C. A. Bambaren.—p. 114.
86 *Acute Nephritis in Secondary Syphilis. L. N. Saenz.—p. 169.
87 The Lymphoid Apparatus. P. Arana and L. Rospigliosi.—p. 173.

79. **Syphilitic Hemiplegia.**—In Odriozola's case, the left hemiplegia is of cerebral origin and the signs of syphilis and alcoholism point to arteritis inducing some small thrombosis or hemorrhage. Such lesions are exceptionally rebellious to treatment; specific treatment kept up for years seems to be the only recourse.

80. **Anomalies in Pectoralis Muscle.**—Dianderas gives an illustration of some anomalies found in both pectoralis muscles of the cadaver of a youth of about 16. If a surgeon had met them in operating he would have been misled.

81. **Psychanalysis in Neuroses.**—Delgado discusses the interpretation of neuroses and functional psychoses by the light of psychanalysis.

82. **Spirochetes in Rats at Lima.**—Ribeyro's research has demonstrated in rats, caught at different points in the city, the presence of the spirochete of hemorrhagic jaundice. They were found in two of the six adult rats, but none were detected in the eight young rats. The kidneys were the only organs examined. The spirochetes were found in the convoluted tubules; sometimes they were in such numbers that they obstructed the lumen. He urges that this infestation with spirochetes is another reason for redoubling the efforts to exterminate rats.

85. **Dubious Sex.**—The patient lived as a woman, but the genital organs were those of lateral hermaphrodism, with what looked like spermatic fluid and irregular menstrual discharge.

86. **Syphilitic Nephritis.**—Saenz remarks that the high albuminuria with acute nephritis in the secondary stage of syphilis does not necessarily imply a grave prognosis. From 5 to 25 gm. of albumin is common, and one case is on record with 110 gm. per liter, with recovery. The other symptoms are those of any nephritis. The prognosis can be estimated from the retention in the blood as with nephritis of other origin. If the retention of chlorids and the albuminuria persist unmodified by specific treatment, the outlook must be regarded as grave. As a rule, however, the acute nephritis subsides under specific treatment, but sometimes it becomes so severe that a fatal termination is inevitable, or the patient may succumb to an intercurrent lymphangitis or erysipelas.

Prensa Medica Argentina, Buenos Aires

June 10, 1918, 5, No. 1

88 Joint Lesions from Tardy Inherited Syphilis. M. R. Castex and R. Denis.—p. 1. To be continued.
89 *Round Ulcer in Esophagus. P. Escudero.—p. 7.
90 *Pulmonary Syphilis. P. M. Barlaro.—p. 8.
91 *Visceral Lesions with Ignored Syphilis. C. B. Udsondo and M. M. Casteigts.—p. 10.
92 Necessity for Coordination and Standardization of Institutions for Child Welfare Work. G. A. Alfaro.—p. 11.

June 20, 1918, 5, No. 2

93 Present Status of Gastro-Intestinal Derangement in Infants. F. de la Torre.—p. 17.
94 *Cirrhogenous Splenic Anemia. T. Castellano.—p. 20.
95 *Myiasis of the Palate. J. Hansen and S. Mazza.—p. 23.

89. **Round Ulcer of the Esophagus.**—Escudero's patient was a man of 56 with symptoms of cancer at the cardia gradually developing in the course of two years. Gastrostomy gave only transient relief, and roentgenoscopy located the stenosis in the lower esophagus and explained it as the cicatrix of an ulcer in the esophagus. Necropsy three years and a half after the first manifestations showed the typical scar of a gastric round ulcer in the lower esophagus, with a cancerous growth just below. With an esophageal ulcer, the progressive stenosis follows after the pains, while with a juxtacardiac gastric ulcer, the painful dysphagia persists as long as the morbid picture continues. With an organic stenosis there is dysphagia for solid food first, and later for fluids; with cardiospasm the dysphagia occurs with liquids first and later with solid food.

90. **Pulmonary Syphilis.**—Barlaro gives the details of three cases which show the wide range of lesions in the lungs for which syphilis may be incriminated. One woman of 47 presented what seemed to be bronchopneumonia on one side and putrid bronchitis on the other, but the whole vanished in eight days, under mercury, as also in another case a bronchitis with much dyspnea which had been dragging along for six months.

91. **Visceral Lesions with Tertiary Syphilis.**—The man of 63 had had symptoms at times from the stomach and later

from the duodenum for nearly ten years. There were no known venereal antecedents. Considerable improvement followed an operation on the duodenal ulcer, but the man returned two months later with unmistakable tertiary meningitis which promptly subsided under mercurial treatment, as also a grave hepatitis which developed a few months later.

94. **Splenic Anemia.**—Castellano is unable to class the case he describes with any of the established types of splenic anemia. The young man's anemia was intense from the first; the spleen and liver became much enlarged with ascites. The necropsy findings in the spleen differed from those with Banti's disease, and treatment as for syphilis had been futile.

95. **Myiasis of the Palate.**—The young herdsman was accustomed to sleep with his mouth open during his siesta in the fields. He applied for relief from sore throat; a patch of gangrene in the center of the palate attracted attention, and this was flushed with an antiseptic. The fourth day from the first symptoms he expelled from his mouth a worm, the larva of a fly. The gangrenous patch was then excised and in a cavity behind it were found 265 larvae of the blue meat fly. The larvae measured from 15 to 18 mm. long by 3 mm. in diameter.

Progresos de la Clinica, Madrid

June, 1918, 6, No. 66

96 *Semen from Forensic Standpoint. A. Lecha-Marzo.—p. 249.
97 *Lesions of Tertiary Syphilis. V. Gimeno.—p. 281.
98 *Test for Gastric Acidity. E. de Salamanca.—p. 299.

96. **Spermatic Fluid from Medicolegal Standpoint.**—Lecha-Marzo reviews the extensive literature on the identification of human semen in spots on linen, etc., and also the literature on the various tests that have been proposed for differentiation. He gives the microscopic findings with the Florence iodin test and others, illustrating both the Florence roundish crystals and the Baecchi hexagonal crystals. The Florence test gives positive findings not only with semen from dogs, cats, horses and other animals, but also with egg yolk, juice of beans and of garlic and other substances, but the Baecchi crystals found with it seem to be specific for human semen. The Barberio test with a saturated aqueous solution of picric acid seems to be specific for spermatic fluid but Lecha-Marzo and De Dominicis have reported positive findings with dog spermatic fluid. Lecha-Marzo's own test (published in 1913), is with a 10 per cent. solution of phosphomolybdic acid. A drop of the spermatic fluid or of the maceration of a stain is placed on a glass slide; this is covered with a cover glass, and between the two is passed a drop of the phosphomolybdic reagent. He usually moistens with distilled water the suspected stain, and after waiting a few minutes to an hour, he squeezes the fluid out on the slide. It can be made more concentrated by heating to evaporate some of the fluid. The reaction is not complete for several minutes. Then a microscope of 600 diameters shows numerous crystals. The most characteristic are hexagonal flat crystals, isolated or clumped. There may also be crystals resembling Barberio's crystals. The characteristic hexagonal and round crystals may show striation, and yellow bodies, resembling mulberries, may be seen in the microscopic field also. Some crystals are colorless, some yellow, some greenish. The hexagonal crystals resist the action of chloroform. Potassium hydroxid turns them blue, and new shapes of crystals appear. In conclusion, he reiterates that his test and the Florence and Barberio tests are specific for spermatic fluid, but further experience is necessary to determine beyond question whether they are specific for human spermatic fluid.

Biologic tests for spermatic fluid with prepared guinea-pig serum have given interesting results. Lecha-Marzo's own experiments suggest the possibility of distinguishing the spermatic fluid of a given person by anaphylaxis tests. He found that an anaphylactic shock followed when a guinea-pig, sensitized by intracardiac injection of blood from a certain person, was then injected with spermatic fluid from the same person. Similar positive results were observed also when the sensitizing injection was made with 0.25 c.c. spermatic fluid, followed by the injection of 1 c.c. blood from the same person. There was no sign of anaphylaxis, on the other hand, when the blood and the spermatic fluid were derived from two different persons. The anaphylaxis test does not prove that the stain is from spermatic fluid, but that it is of human origin. His research offers the prospect that with the anaphylaxis method we may be able to distinguish between different individuals in this respect. As a rule, however, the precipitation method is the most reliable to date of the biologic tests. The article is accompanied with fifteen fine microscopic views, some colored.

97. **Tertiary Syphilitic Lesions.**—Gimeno contributes to the clinical iconography of acquired syphilis, among others, two colored plates of tertiary lesions. One shows ulcerating gummatous syphilids on the back, the other on cheek and lip.

98. **Test for Gastric Acidity.**—De Salamanca declares that heating to boiling renders the usual tests for acidity much more reliable, as he describes in detail.

Repertorio de Medicina y Cirugia, Bogota

June, 1918, 9, No. 9

99 *Aerophagia. E. Piedrahita.—p. 461.
100 The Schooling of Abnormal Children. J. Bejarano.—p. 475.
101 *Amebic Dysentery; Toxicity of Emetin. R. Zapata.—p. 485.
102 Fracture of Skull. J. A. Escobar.—p. 492.

99. **Aerophagia.**—Piedrahita says that the repeated movements of swallowing, the belching of gases, followed by transient relief, and the gurgling sound heard on auscultation of the cardia, aid in revealing aerophagia as the cause of certain disturbances in the stomach, heart and air passages. If the eructation is done facing the flame of a candle, the flame does not waver as it does when fermentation gases are expelled. Three unusually inveterate cases are described, in men from 50 to 64 years old, whose incessant but unsuspected aerophagia had caused dilatation of the stomach with consequent displacement of other organs, with symptoms that had annoyed them for twenty years. The men were enlightened as to their unconscious swallowing of air as they swallowed their saliva, and were instructed how to avoid it. The most effectual means for this is to place a cork between the teeth for fifteen minutes at a time, especially after meals. With a cork between the teeth it is impossible to swallow, and the men soon conquered their aerophagia habit and with it subsided all their symptoms. Piedrahita says that this habit of swallowing air is often an actual tic, and it seems to be responsible for 10 to 15 per cent. of the cases of digestive disturbances encountered at Bogota. This dilatation of the stomach stretches its walls and smoothes out the folds which shelter the secreting glands, and, besides this, the pressure on surrounding organs may induce dyspnea, intracranial oppression and sensory phenomena, unconsciousness and dizziness. He advises carrying a cork in the pocket and putting it between the teeth when the impulse comes to swallow. If there is a tendency to hyperacidity, he supplements this with alkalines and sedatives to soothe the irritated glands in the stomach. By these means excessive production of saliva is prevented, which aids further in checking the swallowing of air.

101. **Amebiasis at Bogota.**—Zapata comments on the prevalence of amebiasis at Bogota, even in persons who have never lived at a lower altitude. The action of the ameba is by no means restricted to the production of dysentery. It may be responsible for various intestinal disturbances but the most common manifestation of its presence is a form of colitis. In one case of the kind an operation for hemorrhoids and an exploratory laparotomy were made, seeking to remove the cause of the bloody stools, the intense pain in the left iliac fossa and the diarrhea. Under emetin, all the symptoms subsided for five months; then they returned severer than ever, and the emetin was resumed supplemented with ipecac. The symptoms were much mitigated but did not completely subside, and the ipecac was given in larger doses, 2 gm. in 100 c.c. of water. After the second of these large doses the pulse ran up suddenly to 120 while the blood pressure dropped very low and there was paresis of all the muscles, especially those of the neck and of inspiration. The woman could not lift her head and swallowing was extremely difficult, compelling suspension of the treatment.